THE

FARMER'S MAGAZINE:

NOVEMBER 1807.

(No. XXXII.)

BRANCH I.

ORIGINAL COMMUNICATIONS.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On Turnip Husbandry;—with Figures of some Implements used in cultivating that Root. By the Reverend Mr Campbell, Kilcalmonell.

SIR,

PERHAPS the account of my potatoe husbandry, given in the last Number, might be viewed by some of your readers as more tedious and minute than necessary; therefore, in detailing my practice in cultivating turnips, care shall be taken to avoid prolixity in every respect. No doubt, turnip husbandry is better understood in many other counties than here; still, as every district has practices which may be useful in others, I hope something may be learned from the following details.

The preparatory culture for turnip, is the same with that for potatoe, though strict attention is necessary to make the land sufficiently fine, by repeated ploughings and harrowings, and to level it by cross-harrowing. In the beginning of June, by means of a double mouldboard plough, furrows are drawn 2½ feet asunder; which, after having the dung placed in them, are converted into ridges by the same implement. The turnips are sown, if the weather is favourable, about the 10th June. If sown much sooner, they are apt to run to seed, and not to keep so well through winter. If sown much later, a weighty crop is seldom obtained. If the weather become suddenly dry after the seed is sown, the farmer need not be discouraged, as will appear from the following article copied from my Farm Journal. '*June 13th* 1799.—The day being cloudy, with small rain, sowed field turnips. Some of them came up a few days thereafter, but were

attacked by the fly, or rather, an insect about half an inch in length, and one tenth of an inch in breadth, which destroyed most of them. The weather continued dry to the 25th, when there was heavy rain; and in a few days the seed, which had lain dormant, began to vegetate. On the 30th a great number of turnips appeared, and many seedlings were in a state of vegetation under the surface. As this is seventeen days from the time of their being sown, it shews that the farmer ought to wait a considerable time before he is at the trouble of re-sowing a turnip field which he supposes to have been lost by the drought.'

Immediately before sowing, the ridges are flattened by the row harrow, the strake, and the roller, that the young plants may be nearer the dung, and, consequently, be shorter time without sufficient nourishment to enable them to resist the drought and the fly. The plants which come up most vigorously at first, are the best in all their after stages; and the seed sown in the high top of a ridge, at a distance from the dung, will not vegetate so soon, nor so powerfully, as that sown in ridges which have been treated in the manner here described. The roller is a cylinder of ash, 9 inches in diameter, and $4\frac{1}{2}$ feet long, so as to allow it to cover two ridges at a time without danger of slipping off either of them. It is fixed in a car frame, and guided by plough handles, to prevent more of its length, and consequent weight, from being on one row than on another, and to assist in turning it at the ends of the land. The rows thus smoothed and levelled, are prepared for the seed-barrow. But, for the benefit of those who are not possessed of this implement, or who have it not of a proper kind, and who cultivate turnips upon a small scale, I shall describe the method which I have generally practised. The seed is whitened with pounded chalk, that it may be seen whether it falls regularly in a small track, an inch deep, made with the end of a stick in the middle of the ridge, and passed through one hole kept open in the grate of a small coffee-pot, which is shaken over the ridge. The seed will run more equally, by putting only a small quantity into the dish at a time; and the sower will, by practice, acquire the habit of walking at such a pace, and managing his hand in such a manner, as to sow about two lib. to an acre, which he will do in less than two hours. The lid of the dish is secured from opening by a bit of flannel of larger dimensions than its mouth, and pressing the lid upon it. These may seem trivial remarks; they will, however, be the means of preventing serious accidents, in country situations remote from the seed shop. Sowing thick, is an additional security against failure in the crop, and weeds will not so easily hurt it; advantages, compared with which, any saving of expense by thin

sowing

sowing is no object. The seed is covered by passing the roller over the ridges, which will shut up the small track in which the seed was deposited. The roller is not used for this last purpose during rain, nor when the soil is so wet as to adhere to it, but employed only when the ground is dry. If the rain continues for some days, until the seed begins to vegetate, there is no occasion for rolling, nor is the omission followed by any bad consequence, as the seed will vegetate equally well without being covered, in such a state of weather as precludes the use of the roller after sowing.

When turnips are beginning to peep through the surface, and for a few days afterwards, they are carefully watched and defended from sparrows and other small birds. When the plants are about an inch long, the paring hoe plough goes round every ridge, so as to leave the middle of it occupied by the turnips, about three or four inches broad. The hand hoe is then employed to thin them, so as to leave the plants 12 inches asunder, reckoned from centre to centre.

The culture of roota baga, is the same with that of common turnips, with this difference, that the former are thinned so as to stand only six inches asunder in the row, because they do not grow to so large a size. For this distance, narrower hand hoes must be employed than are necessary for common turnips.

In about eight days after the earth is removed from the sides of the turnip rows by the paring hoe plough, which will give time for the weeds covered by the plough to rot, and the thinnings from the turnips to wither in the intervals; the earth in the intervals is pulverized and kept clean by the hoop, or (where it is apt to choke) by the pulverizer and paring hoe plough, as directed in the management of potatoes.

When the plants are eight or nine inches long, the double mouldboard is twice drawn in the intervals, regulating its depth and width according to circumstances. The hand hoe follows, to supply any omissions of the double mouldboard; not so much with a view to cover the roots of the turnips, (which perhaps is not necessary), as to destroy all the weeds, against which unremitting warfare is to be carried on by the horse and hand hoes, until the turnips are sole masters of the field. If a second earthing up is required, it will be more effectually performed by introducing the hoop or the pulverizer before the double mouldboard. Any weeds which appear in the rows after they have closed upon one another, are pulled away by the hand.

In 1803, part of my turnips was earthed up by the double mouldboard; and another part was cleaned, and the intervals filled up, by the pulverizer and hoop. I could not perceive any difference

in the goodness of the crop. The natural tendency of turnip, is to have the upper part of its bulbous root above the surface; and as this part is not provided with feeders, it would appear that raising up the earth is not necessary to promote its growth. Where the intervals are filled by the hoop, the land can be more easily ploughed for the subsequent crop, and the turnips can with less difficulty be taken up at the beginning of frost. On the other hand, raising up the earth with the double mouldboard, preserves the roots in some degree from frost, and there is less grass and fewer weeds to be seen in the tops of the ridges, after the crop is removed. Upon balancing those different circumstances, the farmer will judge whether he ought to finish the turnip culture by the hoop, or by the double mouldboard; or whether he ought not to use both, and finish with the hoop.

The following is a description of the Screw Muzzle, or Plough Regulator, invented by me; with an account of the advantages it possesses over those of a different form.

The cramp, Fig. 1, is a plate of iron, half an inch thick, except at the place of the screw 10, where it is one inch thick. It is $4\frac{1}{2}$ inches long before it is folded, and $2\frac{1}{4}$ inches broad. 10 is a bolt hole $\frac{5}{10}$ths of an inch wide, in the centre of the plate, which is to be screwed after the plate is folded. 1 and 1 are two openings half an inch wide, and one inch and a half long; the outermost sides of which are half an inch from the edges of the plate, both at the sides and ends. The plate is folded at 6, 7; and at 9, 8; so as to make the sides 2, 6, 7, 5, and 9, 8, 4, 3, parallel to each other, and at right angles to 6, 7, 8, 9. Each of the three sides is one inch and a half broad.

Fig. 2. 1, 2, 4, 3, is another view of the cramp above described, but reduced to a scale of $\frac{1}{10}$th of an inch to one inch.

The frame 9, 10, Fig. 3, is an iron hoop one fourth of an inch thick, and one inch and a half broad, to suit the width of the cramp. The sides are each 15 inches long, and the ends $1\frac{1}{4}$ inch. This, with an inch allowed for joining with the welding heat, makes the whole length, before it is folded, 33 inches.

The handle 8, 11, Fig. 3, is $2\frac{1}{4}$ inches broad, where broadest, and 9 inches long. It is one quarter of an inch thick at 11, where it is joined to the frame, and tapered thin towards the sides, and towards the end 8, at which last place it has a hole to receive a screw-bolt, by which it is fixed to the beam. It is further connected with the beam by means of a small hoop, which is of such width as to receive the point of the beam after the handle is passed through it. The hoop is about $2\frac{1}{4}$ inches wide by 3 long.

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The stalk 17, 16, Fig. 2, is half an inch thick, about 17 inches long, and one inch and a half broad, so as to admit of its being easily passed through the openings in the cramp. It has an eye, at 16, an inch in diameter, to receive the rod 15, 14, which, after being passed through it, is hooked into the eye of a bolt 18, fixed by a screw-nut in the beam. The rod is 24 inches long. It is not made longer, that the plough may have more clearance, and be less in danger of being choked. It is half an inch in diameter, which is less than the diameter of the hole through which it passes. If made to fit exactly, the shifting of the depth and land by the other parts of the muzzle would not be so easy. It has an eye at 15, to receive the hook of the swingle tree or draught chain. The eye may be 2 inches in diameter. The stalk 17, 16, is curved as in the figure, to suit the circular motion of the rod moved from 14 as its centre. The frame 9, 10, has a similar curve to suit the lateral motion of the rod when changing the land. The cramp 1, 2, 4, 3, Fig. 1, embraces the side 9, 10, of the frame Fig. 3, after which the stalk 17, 16, Fig. 2, is passed through the openings in it, (*see* 1, 1, Fig. 1.), and is fixed at any place required by the screw pin 5. The screw pin being turned round by the moveable key 8, in the same way that a smith's vice is closed or opened, forces the cramp to pull back the stalk, and to press it strongly against the side 9, 10, of the frame Fig. 3. Unscrewing the pin a little, allows the stalk to be moved up or down; which carrying the rod 15, 14, Fig. 2, alongst with it, changes the depth of the plough. This likewise allows the cramp to be moved from one side to the other of the frame 9, 10, Fig. 3; and as moving the cramp necessarily moves the stalk and rod, this gives to the plough different degrees of land; so that one screw pin has the command of all the changes of land and depth.

Advantages of the Screw Muzzle.

1*st*, It is stronger, having less strain upon it than other muzzles have, as the cattle do not pull from it, but from a rod which passes through, without being fixed to it. One muzzle of the above dimensions will wear out twenty ploughs; although the beams are less strained by them than by other muzzles.

2*dly*, The changes are more minute upon it. The cramp can be moved one tenth of an inch laterally to change the land; and the stalk one tenth of an inch perpendicularly to change the depth.

3*dly*, The changes can be made more expeditiously. One screw regulating the depth and land, gives it a great advantage in this respect, as it not unfrequently happens that both require to be altered at the same time; and this can be done more expedi-

tiously by the screw muzzle, than one of those operations by other muzzles.

4thly, From the peculiarity of its construction, the length of its stalk and the breadth of its frame may be so much extended as to admit of its giving a greater range of variation to the depth and land of the plough than what can be given by other muzzles, without straining the beam, or being liable to be twisted itself so much as they are, if made large enough to have equal power with it; at the same time, in those circumstances, it looks handsomer, and is a greater ornament to the plough than any of them are. The frame by which the breadth is changed in this muzzle is 15 inches broad, to admit of the plough being pulled by two horses, and yet be in a line with one of them; as in earthing up horse-hoed crops, either with a single or double mouldboard-plough in very stiff or hilly land, where one horse is not sufficient for the purpose. The stalk, by which the depth is regulated, is made long, to make the same plough suit all the different kinds of soil, and the different lengths of the plough irons, occasioned either by their being newly made or mended, or by their being much worn.

Lastly, Though the original cost of this muzzle should be more than that of other muzzles, (and it is not more, if they are made so as to command equal degrees of depth and land, and be equally strong); yet, if it shall be found to have the durability and other advantages ascribed to it, cheapness will be allowed to be added to the rest of its properties.

The length of the stalk is of great service when the plough is drawn from one field to another; as, by setting it down very low, the point of the plough can be more easily kept from dipping into the ground, or striking against any obstacle in its way. This is particularly necessary with the double mouldboard plough, as it is more liable to injury from such accidents. A plough with this muzzle, by which the point of the beam can be set higher than with others, and with an erect feather attached to the sock to supply the place of a coulter, does not require so much clearance before the sheath, and may therefore have a beam with less curvature than other ploughs. The beam, by having less curvature, and no coulter hole, will be stronger, and may be made lighter than other curved beams in coultered ploughs, and yet have equal strength.

ALEX^R. CAMPBELL.

FOR

FOR THE FARMER'S MAGAZINE.

Hints, regarding the best Rotation of Crops for the County of Caithness, and the other Northern Districts of Scotland. Communicated by Sir JOHN SINCLAIR, *Bart.*

IT seems absolutely necessary to think of some new plan of cultivation, or rotation of crops, in the northern districts of Scotland. Bear, formerly the great source of profit, will no longer indemnify the farmer, or enable him to pay an adequate rent. Wheat, being of sure sale, is certainly a proper article to try; and if sown early (on which the whole depends), not only good crops may be produced, but also grain of excellent quality. In order to ascertain how far wheat would answer, the following rotations are recommended, by an intelligent South-country farmer, to the attention of those who may wish to try so important an experiment, either on light or strong lands.

1. *On Light Lands.*

It is more than probable that a fallow is *absolutely essential to clean the land*, and that five furrows would be necessary the first rotation. Begin to plough early, at furthest in the end of May, or beginning of June. Lay on thirty cubical yards of good dung per Scotch acre, and 30 bolls, or 120 English bushels of Sunderland lime. The dung and lime to be laid on with the last furrow. Sow as early in September as possible. Three bushels of seed will do if sown early; if not, more will be necessary. Both red and white wheat from Essex may be tried, or old seed from Scotland, but always of the very best quality. In April, harrow the wheat, and roll, and sow grass seeds, which will produce, next year, a good crop, without injuring the wheat. The rotation, then, to be as follows.

Proposed Rotation on Light Lands.—1st year, Fallow; 2d year, Wheat, produce, probably 10 bolls per acre; 3d year, Hay; 4th year, Pasture; 5th year, Oats; 6th year, Turnips; 7th year, Bear; 8th year, Hay; 9th year, Wheat, on one furrow.

2. *On Strong Lands.*

It is much more difficult to form a good system for raising wheat on strong land than on light, at least in a northern climate, where beans are a hazardous crop. A fallow with *five* furrows, is absolutely necessary. Begin to plough early in the spring, and sow the wheat in the beginning of September. A greater quantity of manure will be necessary for this kind of soil, namely,

from 35 to 40 cubical yards of dung, and 150 bushels of lime. Grass seeds with lime are hazardous in strong lands. Beans would be the best second crop, if not bear or barley. If bear is sown, take one furrow immediately after harvest, and two in the spring. With the bear, sow grass seeds; and after one year's hay, and one year's pasture, break up with oats, and continue the same rotation, beginning with a fallow.

Proposed Rotation.—1st year, Fallow; 2d year, Wheat; 3d year, Beans, or Bear and Grass Seeds; 4th year, Hay; 5th year, Pasture; 6th year, Oats; then Fallow, &c.

[The above Hints being submitted to the Consideration of some intelligent Farmers in Ross and Cromarty, the following Observations regarding them were transmitted to Sir JOHN SINCLAIR.]

Communication from Mr Archibald Dudgeon of Arboll, in Ross-shire, addressed to Donald MacLeod Esq. of Geanies.

SIR, *Arboll, 18th May* 1807.

I BEG leave to submit to you the following observations on the 'Hints regarding the Culture of Wheat in Caithness,' which, if you judge worthy of transmitting to Sir John Sinclair, they are at your service.

1*mo*, *Light Land.*—1*st*, The cultivation of wheat on light soils *after fallow*, is regarded as hazardous. To speak professionally, it frequently throws out in the spring, or, in other words, a number of the plants die, which generally renders the crop a poor one. 2*dly*, Where land has got a full dose of lime, and wheat the first crop that is sown thereafter, (unless the season is uncommonly fine), the lime militates seriously against the quality. The operation of the lime on the soil protracts the period of ripening, at first; and although the quantity of dung to be administered would be very beneficial in counteracting this, still it appears to me adviseable to give potatoe oats the preference, the first round. Were the foregoing two objections obviated, the preparation in other respects is excellent. Provided it is meant that the ploughings for the fallow are to be preceded by a ploughing before winter, (which is necessary to make fallow work kindly in the ensuing summer), and that harrowing and gathering of quickens is carefully attended to betwixt each ploughing, three bushels per acre of seed is plenty on rich lands, well prepared; but, on the average of soils and preparation, four bushels will be more eligible. It

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is surely well judged to get the seed from England; and I have heard it alleged, and I doubt not on good reason, that the northern counties should have their full supply of seed annually from the south. In place of what is laid down, I would substitute the following

Rotation for Light Land.—First Round: 1. Fallow; 2. Potatoe Oats; 3. Grass; 4. Grass; 5. Grass; 6. Wheat.—Second Round: 1. Turnips; 2. Potatoe Oats; 3. Grass; 4. Grass; 5. Grass; 6. Wheat.

The preparation for wheat, after the three year old grass:—To be ploughed the latter end of August or beginning of September; well harrowed; allowed to lye for two or three weeks, then seed-furrowed across the first ploughing.

2do, Strong Land.—Wheat, after a well wrought fallow on strong lands, is considered as a sure and valuable crop; while the remark, as to the sowing of seeds on such soils in the spring, (unless critically attended to), holds good; at the same time, the idea of beans should be abandoned. In Ross-shire it is a difficult matter to raise them to perfection; and several of the best farmers in the county have given them up. Beans require a much longer season to ripen, than our climate in the north favours us with. On good dry-bottomed lands, they will do; but, on these, turnips will be found a more advantageous crop. Beans being excluded entirely from our husbandry, is not a serious loss. I would propose the following

Rotation for Strong Land.—First Round: 1. Fallow; 2. Potatoe Oats; 3. Grass; 4. Grass; 5. Wheat.—Second Round: 1. Fallow; 2. Wheat; 3. Grass; 4. Grass; 5. Wheat.

Potatoe oats succeeds the first fallowing, as the land is supposed to be newly limed. Grass seeds should be sown with wheat as early in April as the land will carry horses without potching it, taking care not to allow it to become hard and dry before the seeds are sown. It is having the business executed at that nice juncture, betwixt wet and dry, which insures success. Early sowing in Caithness will assuredly be advantageous,—as soon after the 20th of September as possible. The quantity of dung for both soils appear to me greater than a farm can furnish at the beginning, and greater at an after period than is adviseable to apply at one time. I consider from 20 to 25 cubic yards sufficient for an acre if it is well rotted dung. On the other hand, the proportion of lime appears under par. In place of what is recommended, I should suppose from 160 to 180 bushels of lime shells on the light lands, and from 200 to 240 ditto on the strong lands necessary.

General

General Remarks.—While the reduced value of bear and barley imperiously requires that these grains be expelled from the list of rent-paying crops, in order to meet the increased expense of husbandry; and further, that the value of lands be made to keep pace with the progressive advance on lands in the south, while these call for a new system, still *extensive* practice should be cautiously gone into (by those paying rents) till experience justifies their projects. Wheat is unquestionably the most profitable grain we grow; and the soil of Caithness, in general, has every appearance of being suited for its culture. Although the rotations I have submitted strikes me as good, I have not the presumption to say they are the best for that county. The gentlemen and farmers thereof must be better judges than a stranger; and when they are about to introduce the cultivation of a description of grain which promises to add much to the opulence of their country, they will no doubt, by well conducted experiments, ascertain the true rules on which they should act. I remain, Sir, with due respect, your most obedient servant,

ARCHD. DUDGEON.

To Donald MacLeod Esq. of Geanies.

Extract of a Letter from George Middleton Esq. Cromarty, regarding the best Rotation of Crops in Caithness, dated Cromarty, 24th May 1807. *Addressed to Sir* JOHN SINCLAIR, *Baronet.*

I KNOW so little of the soil or climate of Caithness, that I cannot well judge of the proper rotation of crops there; but I think your climate moist, and your soil mostly incumbent on a wet bottom. I would not advise, therefore, your sowing much wheat till after three or four years experience, as it may not ripen well. In some seasons, even here, it will not come to perfection, where the situation is exposed. I have one farm, three miles west from this, rather high, where I find it not prudent to risk much wheat, though the soil is very rich. I think you will find the Potatoe or Polish oats, more certain pay, after fallow, excepting in very good soils and favoured situations; for inferior wheats are very unsaleable.

I think fallowing absolutely necessary in all wet bottoms, whether the soil be strong or light. Turnips may be considered as a fallow. As there are many farms where no dung can be got but its own produce, there will not be nigh enough to cover a sufficient breadth of fallow, at the rate of thirty cubical yards per acre, along with lime. A less quantity of dung, therefore, must often be tried. There is no rule to be invariably followed regarding

regarding the number of ploughings for fallow, as much depends on the climate and soil; but you should plough and harrow in the driest weather, until the land is perfectly clean. The ridges should be made round, and from fifteen to eighteen feet broad; and gathered up, at least twice, by the middle of September. If wheat is to be tried, it should be sown immediately; for on early sowing all depends. Take care to keep off all the surface water at the ends of your field, by clearing to the level, with spades where necessary. Where you intend oats after your fallow, gather it up in the autumn, in the same manner as if for wheat, and sow on that furrow in spring, without further ploughing, harrowing well, or scarifying the surface before sowing. Oats are found to grow well by following this plan. You may sow grass seeds with the oats, or on the wheat crop, in the middle of May, and harrow it. Sowing oats on a winter furrow, is a Northumberland practice; and I never knew it fail where the land is clean.

Where it is intended to sow oats, if the fallow has not been got perfectly clean, plough again in spring before you sow. If you try Polish oats, sow thick, and at least five firlots per Scotch acre.

The following rotations are submitted to your consideration.

1*st rotation.*—On soils of a middling quality, where no dung can be got but the produce of the farm.—1st year, Fallow; 2d year, Wheat or Oats; 3d year, Hay or Pasture; 4th year, Pasture; 5th year, Pasture; 6th year, Oats; 7th year, Turnips or Fallow; 8th year, Oats; 9th year, Pasture; 10th year, Wheat or Oats.

2*d rotation.*—On the best soils, where more dung can be got than is produced on the farm.—1st year, Fallow; 2d year, Wheat; 3d year, Barley and Grass Seeds; 4th year, Hay or Pasture; 5th year, Wheat or Oats, with a light dunging.

I would by no means advise beans, for they will not ripen here, except on favoured spots, and in good seasons.

The probable return of wheat may be stated at from seven to eight bolls: of Potatoe oats, eight quarters. Of Polish oats on your best land, after fallow, you may expect ten quarters per Scotch acre.

I have found, after many years trial, that oats is a safer crop than bear or barley after turnips; and it will probably be more so in your climate; and oats are always of ready sale in the London market. The seed you sow, of Polish or Potatoe oats, should always be changed as often as they become mixt with black oats.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Hints respecting the Culture of Waste Lands, &c.

SIR,

AGREEABLE to your desire, I send you a few loose hints relative to Agriculture, which perhaps may be of use to some of your readers.

1. When we reflect that, in every age and nation, men of the first talents, when they advanced in life, chose to retire into the country to become cultivators, it is wonderful that any thing new, important and true, should remain for us, in these latter days, to bring forward on the science. Yet true it is, that the most powerful argument to give a preference to the cultivation of land, particularly waste, over manufactures and commerce, remains yet to be laid before the public. When a man begins life without a fortune, manufactures or commerce will enable him to get faster forward than land; because his skill as a manufacturer or merchant,—his industry, economy and prudence—will induce the yarn-merchant, or warehouseman, to trust him with their property to a considerable amount. Thus, his credit is also promoted by the profit attached to the goods of the seller, which, if manufactured with taste and skill, or well bought, to suit the export market, will afford a profit far exceeding any culture of land, with little stock. But no man has any inducement to increase the farmer's profit; because, taking more than five per cent. is usury, by the existing defective laws; and nothing but money will aid the cultivator. But when a man begins with a fortune, or after he has acquired it, nothing will enable him to accumulate with so much rapidity and safety as the cultivation of waste lands. Suppose him possessed of 10,000*l.* Sterling. Let him feu 10,000 acres abounding with lime and coal,—say at 2s., 3s., or even 5s. per acre;—it is not long since enough could be got at and under those prices. If he improves 1000 acres *per annum*, the men and money necessary for that purpose are not great, compared to that which many houses in Glasgow employ in trade. If the product pay the expense of the improvement, and thereafter he can set it for 40s. per acre to farmers who can keep lands in order,—though they may not have the necessary stock to put wastes in condition,—he will have cleared 50,000*l.* Sterling in one year. Going on in this way, great part of the expense of the improvement is the feeding his men and horses,—for which he finds a market to himself: and that part of the annual product (of which alone he could make a bad debt) is but a small part of the whole produce,—though he has, at same time, so greatly increased his capital. On the other hand, if a man of 10,000*l.* stock follow trade,

trade, he can do nothing better than buy with cash; by which he gets a profit from the seller: and if he sells, at twelve months credit, his 10,000*l.* for 12,000*l.*, he will have gained 1500*l.* more than his interest; but, by thus attempting to increase his income, he not only risks the loss of that by bad debts, but the capital itself—as thousands have done before him.

2. It is now generally admitted, that some knowledge in mathematics is important to the farmer, by which he is enabled to tie the horse or ox to the plough and cart with advantage to those animals, and to judge if these instruments are properly arranged for their desired purposes. It is also allowed, that some knowledge of chemistry is valuable to him;—because, by it, he can construct his composts in the best manner, and use his manures to the best purpose. But was a great landholder, possessing from five to fifty thousand pounds *per annum*, to say to his tenants—"Gentlemen, you must spend six months in town to study those sciences:" those at least who have advanced in life, and thriven, would smile at him. Yet surely every man of fortune might select a young and good ploughman from the best cultivated districts of Great Britain; sensible, good-tempered, and honest; bind him for a term of years; send him for six months to study those sciences: after which, make him spend his time among the tenants; and say, "Gentlemen, this is the way to increase your quantity of manures; this the way to increase their powers; and this the way to use them. I do not wish to alarm you with risk or expense; but you must try them on a small scale; else I tell you, that you cannot compete for your farms when your leases are out: for he who has tried, and finds their benefit, can afford to pay a rent, and get a fortune to himself; which, if you engage for one half of, you are sure to become bankrupts." I know of no mode so effectual as this to furnish Great Britain with skilful farmers. Nor is this mode a mere theory. After Sir John Sinclair had sat at the head of the Board of Agriculture for several years, he desired me to send him a man who knew my modes and theories, to execute them upon his own estate. I selected Mr Alexander Trotter, who had lived with me four years as a ploughman, and who answers the description which I have given, having put him to study mathematics, chemistry, &c. for six months, before I sent him to Sir John; who, when he had employed him fifteen months, wrote me he wanted words to express the obligation; for he considered him not only as a blessing to himself, but to the county of Caithness;—that he was the best grieve, or farming bailiff, he had ever seen. Mr Trotter, by this short education, has

has been enabled to demonstrate to Mr Pitt of Staffordshire, that his wheel-plough, which he was going to send to Sir John, was not an instrument of any value. Sir John, who has executed many works of merit, if he had done nothing more than call the public mind to contemplate the subject of Agriculture, has made himself one of the most important of British patriots. Nor do I know any superior to him;—or to Mr Watts, for his improvement of the steam-engine; Mr A. Smith for his political economy; Sir R. Arkwright for spinning; and Mr Wedgewood for his pottery: and I hope, when Mrs Abraham shall have taken them all into her bosom, their grateful country will not fail to erect monuments to their memories.

3. No country can advance to that state of wealth, beauty and fertility, to which the industry and skill of man can bring it, until the farmer can be rewarded by cultivating for the inferior animals;—because, whether he cultivates potato, cabbage, turnip, carrot, parsnip, clover, tare or pasture, he frequently gets crops more valuable than grain; while his ground is constantly advancing in cleanness and fertility, and he is greatly increasing his manures; more especially if he receives the urine from his stock into a water-tight place, and keep it till it putrefy; after which, pump from the well three or four times its quantity to mix with it,—because putrefaction, like inoculation, wants but a beginning; fling the putrid water into his dunghills or composts; and as he will soon have more than required for these purposes, sprinkle it in the evening on his pasture fields with a water cart; and soon will he be astonished at the fertility of his grounds. He will also produce more grain, by thus labouring for stock, than if he had cultivated chiefly for grain. Ground, in the highest state of fertility, should have the seed ploughed in the necessary depth, to guard against the crop lodging.—Let two men with the requisite stock persevere for ten years, each, in labouring 1000 acres of waste, having the command of lime. Let one cultivate chiefly for grain; as fast as he cleanses and fertilizes, he exhausts and fills full of weeds. The other for cattle, with his horse-hoed green crops;—as ground is greatly benefited by being kept dry and exposed to the atmosphere, and is also highly fertilized with dung and lime in that situation. At the end of ten years, I would expect the thousand acres thus cultivated for sheep and oxen to be worth ten times the price of the other. Great Britain imports cheese and butter, beef and lean cattle. It is therefore in the state required to accomplish the most fertile and beautiful cultivation. These circumstances form also a crisis in land: for what does it signify whether the farmer drive the produce of the dairy, or cattle, five miles, or fifty, to a market?

If

If these crude remarks are calculated to appear in your publication, they are at your service. And I am, &c.

JOHN MACKENZIE.

Glasgow, November 1st 1805.

NOTE.

Mr Mackenzie will be so good as excuse us for omitting a considerable part of his letter; because it relates chiefly to matters of a private nature, with which our readers are not interested. We shall be glad to hear from him on subjects of a general nature. N.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On Perthshire Husbandry.

SIR,

As a comparative view of the past and present state of rural affairs in the several counties of the kingdom, seems to be well relished by the generality of your readers, I have ventured to transmit you the following imperfect sketch for Perthshire; which, if nothing better comes from this quarter, may be published, were it only for the purpose of having the subject canvassed by attracting the animadversions of abler pens.

The county of Perth is one of the most extensive in Scotland. From Solsgirth on the south, to the top of Scairsoch on the north, is not less than forty-eight miles; and from the top of Ben-Loy near Glenlochy, to Invergowry, within three miles of Dundee, is fifty-eight in a straight line. These are the extreme points. The main body of the county, exclusive of the two parishes of Culross and Tulliallan on the Frith of Forth, lies very compact, and is not less than forty-eight miles on a side, when reduced to a square.

The valued rent is 339,818*l.* Scots; the real rent is at least as many pounds in sterling money, though it has been said that it does not exceed the half of that sum. But this is certain, on some estates near the county town, the real rent is upwards of twenty-four times the amount of the valued rent. It will naturally be supposed, that so extensive a track of country contains a great diversity of soil; and in fact that is the case. The Carse of Gowrie, inferior to none in Scotland for fertility, consists of low lying alluvial land; but, on the other hand, one half, at least, of the county, is mountain or moor, contributing very little to the support of either man or beast; a considerable proportion of which is susceptible of small improvement. We have likewise the weeping ferruginous till, and the hungry

hungry, burning gravel;—the spungy moss, and the arid sand;—the deep rich loam, especially around considerable towns and villages, and the warm, kindly *thatchil*, or stone-brash land.

The climate of some parts of Perthshire differs as much from that of others as the soil does. Snow seldom lies in the Carse; the farmers there are often putting their beans into the ground, whilst sheep in the hilly districts cannot come at their food for snow. Nor does so much rain fall on the champaign as on the higher lying lands, in any time of the year. Some of the Highland vallies, however, owing, it is said, to the reverberation of the sunbeams by the hills, but rather, I suppose, to the shelter which they afford, produce the earliest crops of any place in the county. For instance, the first harvest that we hear of is frequently in the flat about Weem, near the east end of Loch-Tay. It sometimes rains in the eastern part of the shire, while they have fair weather in the south-western; but more frequently the case is reversed, as considerably more rain falls on the west than east side. And, in winter, few of the snow showers brought by a north wind extend beyond the south skirts of the Highlands.

This difference of climate necessarily has a great effect upon vegetation, though much of that influence is commonly ascribed to soil.

It seems to be the opinion of some people, that the climate of Scotland has become much less genial than formerly; and, in support of this hypothesis, they argue that many kinds of vegetables have grown in situations where they cannot now exist. For instance, the remains of forests are discovered on hills, sea shores, and under mosses, where the exposure is such that a tree will not now thrive; and ploughed ridges are found in many places so elevated, that no species of grain presently cultivated will ripen. These are well authenticated facts. But, without recurring to periods so remote, most old people assert, that in their youth the summer season was perceptibly warmer; in particular, that, in the month of May, the heat was commonly so intense, that farmers were obliged to plough in the morning, so as to have the work over by eight or nine o'clock. But it is very questionable, whether the alteration has taken place in the weather, or the constitution of their bodies.

The soil of a part of the county is likewise much altered from its natural state; but this alteration is usually for the better. By draining, manuring, weeding, and pulverization, the defects of the several kinds of land are corrected, and they are rendered more kindly for producing the useful plants.

As there is such a variety of climate and soil in the county, it necessarily

necessarily follows, that the rate of rent must differ considerably, especially as the most fertile land lies in the best situations. For instance, the land around Perth, though intrinsically valuable, is rendered more so by the supply of dung which is procured from the town, and by the market which it affords for such produce as is too weighty to be carried to a distance, *viz.* clover, turnips, potatoes, straw, &c. On this account, it lets at 7*l.* to 8*l.* an acre. The value of Carse land is also enhanced by its situation on the estuary of the Tay and Earn, where the produce may be shipped to market, and lime brought by water-carriage to within two or three miles of even the most distant farm of the district. Much arable land, however, is let at and below twenty shillings an acre, and even high rented at that rate under the present management; which, by more frequent green cropping, and especially by the introduction of the turnip husbandry, would afford double that rent, and in many cases more. But there is a great proportion of high lying heath, and steep acclivities in the county; on part of which, improvements to a certain extent might be effected, by paring and burning, watering or planting with wood, though altogether incapable of melioration by the plough. Such land can pay but a trifle of rent.

It is incontrovertible, that the gradual depression of the value of gold and silver,—the securing to the farmer a monopoly in the home market for his grain, at a higher nominal rate than formerly,—the recent improvements in the art of agriculture, by which he can draw from the soil a greater quantity of produce,—the introduction of machinery, by which some parts of farm labour is much cheaper performed,—and the adoption of more economical modes of performing other parts, all tend to enable him to pay a higher rent than his predecessors. Still, however, it is a very general opinion, that all these causes combined, are inadequate to effect such a rise as has of late taken place. It can only be accounted for by the high price which grain has maintained for several years in the north of Europe, and by a greater number of people possessing capital sufficient for stocking a farm than formerly, who can turn to no other employment. But whatever the present rise in the rent of land may be owing to, it has been unexpected and surprising even to landlords themselves; nor is it possible to say what the ratio is in which it has taken place; many farms being doubled, trebled, and even quadrupled in rent, within the last twenty years. One farm, which lately was rented at twenty-three shillings an acre, by an industrious tenant, who yet made no money by it, was lately let at five pounds fifteen shillings, being exactly the former rent quintupled, besides the tax on property, horses, &c.; and within these few

months, a number of farms on an estate near Perth, were let at even a greater advance. On every such occasion, there is a numerous competition, which is very different from the state of matters fifty years ago. I recollect to have heard my father say, that about that period, he knew Sir T—— M—— to have been much incensed against one of his tenants, for taking a farm for his son on a neighbouring estate, whilst he (Sir T——) had one which he could not get off his hands; one which, now-a-days, would bring four pounds an acre. And even within less than the half of fifty years, I remember several farms in the most eligible situation in the county, lying for years unoccupied, because no tenant could be found at a rent below the fourth of what they would now let at.

The great number of candidates which appear at every opening, enables the landlord to propose very unreasonable conditions of lease, without deterring offerers; and these are sometimes of a nature much more oppressive to the tenant than beneficial to the proprietor; as is the case with every kind of bonnage service, and many of the restrictions as to the mode of cropping usually imposed; and, in some instances, conditions having a fraudulent or dishonest tendency, are inserted in leases. I have seen, for instance, one which contained a clause declaring any deed, which in law constituted the tenant a bankrupt, to be an irritancy of the lease, which it should not be competent for the tenant or any one else to purge, by paying his debt, or any other means. A clause of truly unequivocal import; as, by virtue of it, after a tenant has expended part of his neighbour's substance, and the whole of his own, in improving the farm, a slight inattention on his part, a quirk of law, or an unavoidable accident, may put it in the power of the proprietor to appropriate the whole meliorations to himself, without making those who have been at the expense of them any compensation; and indeed the clause now inserted in every lease, excluding assignees legal and voluntary, is something of the same cast.

Within these few years, landlords, in letting their lands, have again adopted several of the old disgraceful remnants of villanage, which had been discarded for twenty years back; such as paying kain and driving fuel. They likewise oblige the tenant to insure the steading, and pay a moiety of the annual premium. Of late, too, they have reverted to the old method of taking part of the rent in kind. Not a few farmers, on rich deep land, made money during the dearth in the beginning of this century; as these seasons affected such soils only in a slight degree. Some landlords, vexed to observe this, without having it in their power to come in for a share, resolved to secure that advantage in future; therefore,

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in most new tacks, a considerable proportion of the rent is paid in grain. This practice, I believe, began in the Carse of Gowry, and there it is now universal. Commonly a boll of grain, half wheat half barley, is taken on each acre, whether the soil be good or only ordinary, beside the money rent. On inferior soils, where little wheat is grown, the grain part of the rent is sometimes taken in one third wheat, one third barley, and one third oats. The landlord, however, does not accept of the *ipsa corpora*; the price is that of the highest fiars, and that on land of every description. This method of paying rent is particularly dangerous for the tenant of thin soils, whether clay or gravel. As it is only the price which the disposable produce of a farm brings at market, that affects the farmer, it is quite immaterial to him, whether the oats, for instance, on which he maintains his servants and horses, and which are used for seed, would sell, *per* boll, at ten shillings or ten pounds. In the late years of scarcity, many of those who occupied shallow or moorish soils, were so far from sending grain to market, that, after deducting what was needed for servants and horses, they had not a sufficiency for seed. This was a hard case; but as their rents were fixed in money, it was comparatively light to what it now will be, on a return of similar seasons; as they must pay an enormous rent at a time when the farm produces less than nothing to pay it from.

The general method of bargaining for farms is by private offers; but some landlords expose them to public auction, reserving a right to select the tenant from a number of the last bidders; and, lately, an instance of a landlord taking the benefit of both ways occurred. He first advertised for private offers, to be received till a specified day, and he got, I am informed, about thirty. He then fixed a day on which it was to be publicly rouped. It was accordingly exposed at the highest private offer; but, though a great number attended, nobody chose to advance. Some Perth people have since got the farm.

Most part of leases are of nineteen years endurance; but there are proprietors, particularly the one alluded to above, who give only from eleven to fifteen; and as little or nothing is ever allowed for reparations, the state of the steadings on such properties may easily be conceived. Fifty years ago leases for life were granted on some estates. On one extensive property, lying towards the Highlands, many of these still exist at a very low rent; but as the land, at the time of granting them, was occupied in townships, *i. e.* a number of farm steadings situated in the same village, whilst the lands lay in runrig, all substantial improvement was excluded; and, even at this

day, nothing effectual can be attempted till the last lease of the township fall.

Some farms are occupied by feuers. This species of holding prevails chiefly on the Ochil Hills, which lye on the borders of Fife and Kinross-shires. The feu-duty, being commonly the rent which the farms let for upwards of a century ago, when they were fued off, is always much below what they would now bring.

Very little land is now possessed by professional farmers without a lease.

The form of leases, even thirty years ago, was extremely simple, at least such of them as we have had an opportunity of perusing are of that description,—merely stating the term of entry, duration of lease, kind and quantity of rent, term when payable, and such like essential clauses, without any of those unnecessarily vexatious ones, which form so prominent a feature in modern deeds. In some cases, the tenant was restricted from ploughing too near the banks of rivers; and, in others, where two or more possessions lay in rundale, the several tenants were taken bound to plough and depasture their respective portions of each break at the proper periodical intervals, according to the then prevalent system of husbandry. And, in one instance which came under my observation, where the farm consisted of a stiff clay and a hazle loam, in nearly equal parts, and very distinctly marked, the tenants were restrained from laying lime on any part of the lightest half, lest they should by that means 'run it out,' *i. e.* exhaust its fertility. The restriction on dressing any kind of soil with lime, will no doubt appear surprising to modern husbandmen. I am not, however, certain, but that, as the land was then managed, it was in certain cases very proper. The application of calcareous earth of any denomination, in sufficient quantity, will certainly cause any soil part with its stock of vegetable matter. If this is not replaced, by laying on dung, or some other decaying animal or vegetable substance, the land, by continued cropping, is rendered incapable of supporting vegetables, and becomes what is denominated a *caput mortuum*. The expense of lime is so great in this part of the country, that a dose large enough to have this effect is never applied. But, forty or fifty years ago, when shell marl began to be much used, it was, in many places, laid on with so liberal a hand, and the ground so over-cropped, that in a few years its vegetable powers were completely exhausted: and, for a great length of time, it did not acquire a sward, unless it got a copious dressing of rich dung. However, farmers now manage better; and, by grazing and green-cropping,

cropping, they find that shell marl is rendered a most valuable manure.

Forty years ago, there hardly was any such thing as a prescribed rotation of cropping. The infield and outfield system was the only one known. There certainly was a necessity for landlords interfering in one shape or other; as the general principle on which most part of tenants acted, was, to crop the outfield with oats, till it was so exhausted, that the return was inadequate to the expenditure, when it was left untouched for some years, till it produced a dry hide-bound turf; while the infield was perpetually cropped; so that, though it received all the dung on the farm, the effects were not very beneficial, as the ground was always foul. But the case is now altered. Modes of rotation are inserted in every lease; and, in many cases, the theory of the landlord is no less injudicious than the practice of the tenant. Indeed, so intent are some proprietors on fettering their tenants, that it is not uncommon to take them bound to perform physical impossibilities;—such as, to lay a certain number of cartloads of dung annually on the fallow, or land prepared for green crop, when it is not in their power to procure half the quantity. And an absurdity equally glaring, and one that is very common, is the prescribing the same mode of management over the whole farm, though it consists of a great diversity of soils. There must be no difference in the cultivation of loam, clay, sand, and peat or moor, unless the tenant is willing to pay an *additional* rent—generally double the *ordinary* rent at least. *

No fixed system of rotation can be condescended on as prevalent in any one quarter of this county. Many of the small farmers, on ordinary land, still adhere to the practice of the old school, endeavouring to have a crop of oats or barley from every spot which will produce any thing like a tolerable one, holding turnips and every other kind of green crop in small estimation. More extensive farmers of such soils, frequently apply the whole,

* When reſtrictive clauſes became common in the leaſes of this quarter, the money to be paid for any deviation from the management agreed upon was termed a penalty. But in an action for deviation, Graham *a.* Stirton, which came before the Houſe of Peers *in forma pauperis* on Stirton's part, the Chancellor, Lord Thurlow, decided, that as the payment was ſtated to be a penalty, it could not be meant to exceed the amount of the damage which the farm had ſuſtained by ſuch miſcropping. This, of courſe, cut down the ſum awarded to very little, and much alarmed the landed gentlemen. However, they now take care to ſtate expreſsly, that the ſum ſtipulated to be paid, in caſe of croſs-cropping, is not a penalty, but additional rent, which it is optional for the tenant to come under or not.

or nearly the whole, of their dung, to raising turnips. Some overseers, whom gentlemen have brought from the middle counties of England, cultivate that crop in the broadcast manner; but the practice is not like to gain ground. Eating off the whole, or part of the crop, by sheep enclosed in nets or hurdles, is practised by a few; but the more common way is to draw the whole, and cart it to a stubble or grass field for store beasts, or to a fattening byre for bullocks. This last is especially practised in Strathmore, part of which extends into Perthshire. On some estates pasturage is a favourite system; the tenant being bound to have a large proportion in lea; and sometimes a field or two is reserved in perpetual pasture.

A dozen of years ago, the rotation followed in the Carse of Gowry and other wheat soils, was the well known six shift course,—fallow, wheat, peas or beans, barley, clover and ryegrass, oats; and it was long considered as the most advantageous that could be adopted on that kind of land. But, of late, methods are devised to have the wheat crop come oftener round. Sometimes the leguminous crop is thrown out, and the barley immediately succeeds the wheat; sometimes wheat is again sown after the green crop, especially if it is beans drilled, or tares cut green; sometimes the clover stubble is broke up and sown with wheat, either on one, or three or more furrows, according as a second cutting is taken or not; and sometimes the following rotation is adopted: 1st, Fallow; 2d, Wheat; 3d, Barley; 4th, Clover and Ryegrass; 5th, Potatoe Oats; 6th, Wheat. And so far are the landlords from checking this frequent recurrence of a wheat crop, that, in the last tacks, the tenant is only restrained from having more than a third of his farm under it.

On the Ochils, agriculture is nearly in the same state in which it has been for a century back. With many, the infield and outfield system is still in vogue; and an inconsiderable quantity of butter and skim-milk cheese, the produce of their half fed cows, brings in a little money in summer. It has already been stated, that most of the occupiers are feuers. Whether the backward state of agriculture in this district is a consequence of the low rent or feu-duty, I shall not presume to say. There is, however, one circumstance which seems to point that way, viz. that the most of improvements recently executed have been upon farms held under lease. But, in my opinion, the principal exertions have been made in a wrong direction. Many of those farmers who attempted improvements are from the Lower Strathearn and the Carse of Gowry, where they had been accustomed to consider wheat-raising as the chief object; of course, the small quantity

tity of dung that can be collected on the farm, is wastefully expended on summer fallow for a crop of wheat, which, on this light soil, and exposed situation, seldom can be reckoned half a middling one. The turnip husbandry would give far better returns. The stock is black cattle; but the land is particularly well adapted for a breed of fine woolled sheep, being, in general, green pasture of a moderate elevation. Limestone and coal are within a few miles; and plenty of stone for enclosing may be got over the whole of it. By the proper use of these articles, winter keep might be provided for the sheep stock, and the soil greatly meliorated. Very little of the western Ochils is arable. The stock there is sheep; but, being all green land, considerable improvement might be made by substituting the Cheviot, Lomond Hill, South Down, or some such valuable breed for the present black-faced race.

The greatest improvement which the Highlands of Perthshire are susceptible of, is a better provision for the sheep in winter, while the hills are covered with snow, and in spring, while the ewes are yeaning, before the grass rise. But how this can be done, while the arable land is parcelled out in possessions of six and eight acres, is difficult to conceive. Of this, however, we are certain, much expense is annually incurred by sending the stock to the Lowlands during the winter months, and frequently much loss, by death, from cold and inanition, after their return. In spring, the dark heath is often to be seen closely studded with their shrivelled carcases. Forty or fifty years ago, every farm, even in the Lowlands of Perthshire, without regard to soil or situation, had a flock: even rich clay land, which, at present, will grow twelve or fourteen bolls of wheat, was then a sheep walk. Had these been heavy sheep, which require good keeping, there would have been nothing susprising in this; but the breed which then existed in Scotland, was a fine-woolled, white-faced animal; smaller, and handsomer than the broaked sheep. Some remnants of this variety are still to be found in the county; and I do think, that were they attended to, they might become valuable stock, having equally fine wool, and much finer bodies, than the redoubtable South Downs. But though every farm had a shepherd, at a pretty high establishment, the flock was wretchedly managed; and though much fine land was depastured by sheep, it was not given up to them till it was completely exhausted by overcropping. As there were no turnips, and but little hay, the sheep got not a mouthful of any thing in winter, excepting what they could pick up in the fields, of the coarse withered grass which they neglected in summer, and occasionally a few colewort leaves, which they stole, by scaling the kail-yard

dikes; and for which they paid dear, being always hounded a good way off for each transgression. In spring, they were constantly employed running after the plough when it was at work, gathering the roots of spearmint, mugwort, and such weeds; a large stock of which was to be found in all arable land. Nor was any branch of the sheep economy better conducted than another. They were twice a day driven to fold, often at a considerable distance, and that frequently a standing fold, where they stood to their belly among their own excrements; and, as if there had been danger of raising the stock to a weight disproportioned to the keep, care was taken to stint the lambs, by milking the ewes every evening before folding. This is a scene which I well remember to have witnessed, more than thirty years ago, when a boy at school. The maids purposely delayed it, till after sunset, that they might have the assistance of their inamoratoes, the unmarried ploughmen, after they had pulled their stated number of backloads of thistles. The ewes were driven in a body into a bught, or small fold, whence they were taken individually, as wanted to be milked. It was then that the swain's assistance was of use. He dragged the reluctant ewe from the bught, and held her by the horns, while the nymph going behind her, abstracted, perhaps, two or three gills from her udder. Though a few minutes were usually sufficient for doing this, yet it seldom was performed, without something being added spontaneously by the ewe to the contents of the pail. The solid part swimming at top, the maid occasionally skimmed that off with her fingers. The more dilute excrement mixed with the milk, and, together with the yolk, and grease from the milk-maid's hands, no doubt imparted that gratefully pungent, aromatic taste, for which ewe-milk cheese then was, and still is so celebrated. And here, by the by, it may be remarked, that perhaps an improvement might be made upon the cow-milk cheese of Scotland, at present confessedly very ordinary, by a similar process. Perhaps some superior kinds of English cheese, that of Stilton, for instance, owes its exquisite flavour to some such management.

At present it is a matter of dispute among connoiseurs, whether the best way of improving live-stock be to cross the breed, or breed in and in. I shall not presume to interfere in the contest. I am only to observe, that our storemasters, forty years ago, always bred in and in. They would as readily have believed the most improbable tale in the Arabian Nights' Entertainments, as that one who had plenty of tups of his own, would pay another six hundred guineas for the loan of one for six weeks. They managed very differently. It was nowise uncommon for them to

reserve

reserve such males as were too weak and puny for undergoing castration, to serve the females. This held, not only with regard to sheep, but even black cattle; and I have even known instances of such management with horses. Here was an evident saving at the outset; and the first advantage is, in many cases, the best. A good ewe with lamb, might bring five shillings, and a fat wedder six. Mutton, in retail, was from a penny to a penny and a half per lib.

There are now but few sheep kept in the Lowland division of the county; and the management of these is very different from that of former times. Forty guineas have been given repeatedly for a ram, during the season, besides the expense of bringing and returning him forty miles. The sheep always have good keep; in summer, a full bite of grass, and, in winter, turnips and hay if necessary. Excepting a few of the black-faced kind, kept by gentlemen for their own table, they generally are of the New Leicestershire breed. When this kind was first brought into the country, their mutton sold in Perth market a penny a pound higher than Highland mutton, merely because it was a scarce article; but the case is now so far reversed, that many people will not buy it at all. I lately knew of some scores of these sheep being sent from beyond Perth, first to Edinburgh, and then to Glasgow, before they could be disposed of.

There is nothing remarkable in the stock of black cattle. Although a good number are raised above what are consumed in the district (every farmer rearing a few), yet no extraordinary exertions are made to improve the breed, at least this is the case in general. Some years ago, indeed, a bull was brought from Devonshire, whose services were offered at three guineas a cow. But it will readily be believed, that he would not be much sought after, in a place where, only a few years before, they had been accustomed to have their cows brought into milk, for twopence halfpenny, or threepence halfpenny each. To be sure, we are told, that these Devonshires are kindly feeders, and that their beef brings a higher price in the London markets than any other breed in England. However, as a counterbalance to these good qualities, we find that they require better shelter than the greater part of our fields afford, where, nevertheless, our Highland breeds feel quite comfortable; that they will barely thrive on keep which will fatten the others; and that no beef is more esteemed, than that produced from a Highland stot, either in London or Rannoch. Bulls of the Teeswater and Galloway varieties, are likewise to be found among us; but it is merely because foreign fowls are thought to have fair feathers, that we prefer any of these to the West Highland breed. Cows of that stock are not

considered

considered as good milkers; but they are, at least, equal to the Devonshires or Galloways, in that respect. And I am confident, that were the best cow in Ayrshire, or Gloucestershire, carried to Skye, and obliged to brouse on heather in summer, and sea-wreck in winter, as the indigenous cattle are, they would produce neither milk nor beef. Their hides would soon go to the tan-pit. On the other hand, when cows of the West Highland breed are carried while young to good keeping, they are found nowise deficient as milkers, on farms where proper attention is paid to that matter. In symmetry of body, this breed is surpassed by none; in facility of fattening, and quality of beef, it is equalled by few; and, in hardiness, it excels all. Nor have I a doubt but that the day is fast approaching, when the West Highland, and Hebridian breed of cattle, will be as much sought after, as those of the counties of Durham, Hereford, Devon, &c. are at present. Formerly, the cattle stock in this quarter were very much neglected during winter, no provision of succulent food, nor indeed of any thing, excepting straw, being made for them. In the spring, this was particularly hard upon cows in calf. They were sometimes so debilitated as to be unable to bring forth, and frequently contracted diseases under which they laboured for a long time, and of which they never recovered. I well remember to have seen the poor wives, during the nipping cold north-east winds in May, provincially termed the *Cow-Quake*, tending their cows, reduced to a skeleton, and covered with a blanket, while they picked up any spires of grass which had begun to rise in the kail-yard, or at the bottoms of walls and banks. And to such extremities were they reduced at times, that I have heard of their taking the half-rotten thatch from the roofs of houses, and giving it to the half dead animal, as the means of prolonging its miserable existence. On this account, the half of them did not take the bull; and those who did, were too late for rearing stout calves. The yeld cattle, at same time, were so emaciated, that it was always the end of the season, before the heath and steril hide-bound leas, on which they depastured, brought them into such condition, as would now be considered but half fat. The working cattle were necessarily kept in better plight, by having a sheaf of unthrashed oats every day. Though much amendment has taken place by the use of turnip, potatoes and oil dust, a great deal still remains to be done. So long as milk cows are kept chiefly upon straw in winter, their produce in milk will be scanty, even in summer. Such management forms a very striking contrast with that of the Upper Ward of Clydesdale, and contermin-ous districts. There, even every cottager makes ample provision of hay for the winter keep of his cow; and in no part of Scotland

land have I seen so valuable a breed of cows, or the labouring poor derive so much benefit from cow keeping.

Perthshire does not furnish a sufficiency of cheese for its own consumpt; and any that is sold, is only of an ordinary quality; butter, rather than cheese, being the object of those who keep cows. The economy of rearing stock varies on the different farms, according to their respective adaptation for corn or grass. On rich corn land, few cows only are kept; and as there seldom is any pasture, they are soiled, in summer, within doors, on clover. Their calves, and perhaps a few more bought in, newly dropt, are usually reared by hand. From these the stock of cows is kept up. The stots are sent to grass in summer, and kept in the straw-yard in winter, till three years old, when they are sold off. To assist in converting the straw into manure, a few more stots, two and a half years old, are bought in, at Michaelmas, and sold off, after being either one or two winters in the straw-yard. On corn farms, where pasturage forms part of the rotation, the same stock is kept the year round; selling off at any season, when they find themselves overstocked, if a market is to be found. On Highland grazings, the stock is kept without doors throughout the year, depending for winter food almost entirely on heather, or the coarse withered herbage which they rejected in summer, unless the snow lies deep, when they are often sent for a few weeks to the straw-yards, or sheltered pastures of the Low country. The surplus stock is usually parted with in autumn; the greater part at the Falkirk Trysts.

Our Low country does not produce horses in sufficient numbers for its own demand. Clydesdale supplies the deficiency. Since the use of two-horse ploughs have become common, our horses are improved in both size and figure, owing to the use of stallions from Yorkshire, and the west of Scotland. Their keeping and treatment, too, differs widely from what it was forty years ago. Now they are fed on peas straw, hay and oats in winter; and cut grass and tares in summer. Then they lived on straw, and on chaff mixed with the light grain boiled, in winter; and in summer, as they had nothing to do excepting to lead home the fuel, they were always at pasture in the day, and at night got a quantity of thistles thrown before them. A horse-comb was an implement hardly known. If, on extraordinary occasions, they got any currying, an old wool-card did mighty well. There is no peat in the south-east part of the county; and coal is twenty miles distant. It was then brought over land in sacks on horseback, but latterly in carts; and the only provision that was made for the horses on the journey was a backload of thistles. Now, the greater part of the coal used by farmers is brought by water from

from the frith of Forth, and Newcastle; and the horses are employed in dressing the fallow and green crop. The Highlands formerly reared a great number of garrons, which were of little real use to any body. They traversed the fields the whole year round. During snow, they scratched the heather from under it; and I have often seen them, in frosty weather, beating the growing whins on the hardened ground, with their forefoot, and then eating them. They never were taken in hand by those who reared them, but brought in droves to Crieff or Strowan fairs; and when a purchaser pitched on one, two Highlandmen darted into the drove, and fixed, the one on the mane, and the other on the tail. The first prevented the astonished animal from rearing before, the other from kicking behind. By thwarting it in this manner, they soon succeeded in mastering it. Middling ones sold for 50s. to 60s. But it was no easy matter to take those animals away from the drove. None of them could be put into a stable any other way than by pushing them in backwards. Good keeping rendered many of them spirited enough; but, after being half starved for three years, few could be raised to a sizeable plough horse; therefore the trade is now much on the decline, sheep paying better.

Formerly many goats were raised in the Highlands; but their number is every year lessening, being found very destructive to the woods, and, in every respect, a more unprofitable kind of stock than sheep. But as there are a species of goats to be met with in other countries, whose hair is of very great value, perhaps it might be an object to try them in the Highlands of Scotland; especially as we know that some of them, the goat of Thibet in particular, thrives in a climate no less inclement. A nobleman tried the rein-deer, some years ago, in the Highlands, but the race became extinct. However, it does not appear that he ascribes the failure to the country, as I hear he is making a second attempt.

The Highlands have a peculiar breed of swine. It is a long-legged, lank-sided, high-backed, long-snouted, ugly animal, never rising to a large size. It is closely covered with a coat of erect bristles; is always in a hurry, and seldom out of one kind of mischief or another: being never seen, but either trotting from place to place, or turning up the earth, and seemingly always in a state of starvation. Indeed, were a personification of hunger wanted, I hardly know of a more expressive object than a Highland sow. However, those who are judges of good eating tell us, that Highland pork is more delicious (less nauseous, I suppose they mean), than any other.

The

The difference betwixt our modern implements of husbandry, and those formerly in use, is not less than that of our live stock. The plough universally in use was the Scotch one—a clumsy instrument; but which did its work much better than a stranger to it could imagine. The wooden part of it cost about five shillings; and the share, coulter and hoop, which secured the mortise for the coulter, about three. In the Low country, it was always drawn by four, six, or eight oxen in yoke, and two horses. It is very evident, that the greater part of this force was expended to no purpose: the one half doing little more than counteracting the devious exertions of the other; and the slow pace at which it crawled along was such, as (without taking into the account the little work performed) no modern farmer could endure to see. Yet a farmer, who, at that time, should have set a plough to work with only two horses, would have been considered as on his last legs. Our Highlanders ploughed with four horses abreast, a driver going backwards before them, holding a stick in one hand parallel to the surface of the ground, to which the halters of the four horses, usually made of horse hair, or twisted *withy*, were tied; and in the other hand a whip or switch, with which he drove on such as did not enough exert themselves, by striking them in the face. This ludicrous practice is now much on the decline, and, in a few years, will, I trust, be extinct; two-horse ploughing being now universally in use in the Lowlands. The four-horse ploughs of the Highlands evidently took their rise from the subdivison of farms. It has already been said, that the land is occupied in townships, each consisting of one or more ploughgates. The greater part of these ploughgates are divided into halves, or quarters, and let out to as many tenants; some having a half, and some a quarter of a ploughgate, for which they furnish their contingent of men and horses; so that it is quite common to see a smith and a cooper, the one holding the plough, and the other leading or driving the horses, to-day; and to-morrow, a weaver and carpenter managing the same plough and horses, each decorated with the insignia of his respective craft. They assure us, that the trampling which the two horses on the right hand give to the ploughed land, is of great use, by compacting it so as to enable it to carry a crop. In some parts of the Highlands, they are of opinion too, that harrows with iron tines fret the earth so much, that it produces a less weighty crop when the seed is covered by these, than when tickled by wooden pins in place of iron ones.

The plough now used in this county is that termed Small's; but there are several varieties of it. In some parts the chain is still

still in use; but it is laid aside over the greatest part. The mould-board is more concave in some kinds, than in others.

Double-horse carts are now used in the best parts of the county; though many persons are of opinion, that one-horse carts are most advantageous. The small farmers in the upper part seldom put two horses to a cart. Forty years ago, there were but few carts of any kind. The dung was carried out in wains, each drawn by two oxen and two horses; the box of which was commonly a kind of basket work, sometimes of birch or hazle rods, often of straw ropes. The grain was carried to market in sacks on horses' backs. Little more than a dozen of years ago, nearly the whole grain in the Carse of Gowry, was carried to Perth, Dundee, or the several shipping places on the Tay, in that manner. A dozen or twenty horses in a trip, with each his four, five, or six firlots of grain on his back, and every two having a man to attend them, was quite a common sight. And, in rainy weather, it was frequently impossible, for weeks together, to carry it even in this manner. Turnpike-roads are now made in all directions, and two horses draw twelve or fourteen bolls of grain, or a hundred and fifty stones of hay, with more ease and safety, in any season, than they formerly carried ten firlots. Before these roads were made, coals were likewise brought on horseback from the pits in Fife. A sacking bag, slightly stuffed with straw, was laid along the horse's back. Eighteen Dutch stones of great coal, in a sack, were then laid across this; and, under this uneasy load, the poor animal was obliged to travel twenty, or thirty miles, without unloading, and without any food, excepting a handful of two of thistles.

In some places, a wheel-carriage, termed a tumbler cart, was in use. The wheels were two feet high, of solid thick ashen plank, and fixed on the axletree; so that the cart is not turned about without difficulty. I am not sure, but a specimen of this awkward carriage may still be found about Glendevon.

Thrashing machines are now very common in this county; so much so, indeed, that there hardly is a corn farm of fifty acres without one, driven either by horses, or water, or both occasionally; none with us being driven by wind, as far as I know. One reason why they are so numerous in this place, may be—the first one was invented and erected in Perthshire. I think I see you stare, Mr Conductor; but be not alarmed, Sir, for the honour of East Lothian. No one more highly appretiates the value of Mr Meikle's invention; no one more regrets, that he has not received that remuneration from the farming interest which he so justly deserves; and no one would more cheerfully contribute to discharge

charge the obligation which we are under to that eminent mechanic, than your humble servant. But the thrashing machine, to which I allude, is of the scutching kind. So early as 1758, Mr Stirling, farmer at Glassingal, in Strathallan, two miles above Dumblane, contrived this, and had it erected under his own eye. Unlike what happened with all former attempts at inventing a machine for thrashing, this succeeded; and, though its powers are by no means equal to what is necessary on an extensive corn farm, it has qualities peculiarly adapted for a small one. It is easily wrought;—one, or at most two, ordinary horses being sufficient. One man to feed, and another to take away the straw, are all the hands that are needed, besides the driver. It requires less room than the other kind; so that the small barns, on such farms, contain it; and its original cost is but little,—from 20*l.* to 30*l.* I have seen one driven by water, with an appendage for humbling barley, the expense of which did not amount to 30*l.* Indeed, there hardly can be a more convincing argument in favour of its utility, than its being in universal use among the small one-plough farms, which are so numerous in the south-west part of this county, and the neighbouring county of Stirling. Were a method devised, of adapting fluted feeding rollers to it, its value would be considerably enhanced; though there is a probability of its being soon entirely superseded by the lately invented cast-iron machines.

Formerly, the grain was thrashed, partly by barnmen, who received a twenty-fifth part of the corn for their labour, and partly by the ploughmen, in bad weather, and in the morning before breakfast, and frequently by candle-light, before day. At present, such farmers as are unprovided with a thrashing machine, find it difficult to procure servants—so averse are they to flail-work.

About fifty years ago, fanners were hardly known in this part of the country. A moderate, steady, fair wind was necessary for dressing grain; and much inconvenience, loss and distress was occasioned by a continuance of calm, stormy, or wet weather, before fanners were introduced. When this happened, the grain in the chaff was put into what were termed straw sacks. These were formed by coiling up a rope of straw, four inches thick, in some part of the barn, and throwing the chaffy grain into its area, as the rope was laid around. There it remained often for months together, till a fair wind came; during which interval, some person was constantly in waiting, on the lookout for the favourable gale; and when it did spring up, every other operation was laid aside, and the opportunity seized. This was particularly inconvenient at corn-mills, as the husks must always be blown off from the kernels, after passing through the mill, before it is ground into meal. At length the method of dressing grain by means

means of fanners, was brought into this country, it is said, from Holland. Farmers seemed much gratified by the facility with which they could, by their means, clean, and send to market their grain, at any time. An obstacle to the universal introduction of this practice arose, however, in a quarter whence nothing of the kind had been expected. A gentleman, who was proprietor of a considerable landed estate in the county, Incumbent of the quondam metropolis of the kingdom, * Principal of an University, or, at least, Head of a College, Professor of Theology, and Leader of a numerous body of Christians, 'lifted up his testimony' against the impiety of contravening the decrees of Providence, by setting in motion a portion of the atmosphere which had been ordained to remain at rest at the time. Anathemas were denounced with all the fervency of zeal, and force of expression, which distinguished the pulpit oratory of that gentleman against such as should persist in this course of iniquity; and cases quoted from holy writ, in which, for similar offences, the displeasure and vengeance of heaven had been manifested in a manner strikingly terrible. But the well meant warnings of this faithful watchman, received the same treatment which has awaited the admonitions of upright and holy men in all ages, but more especially in the present backsliding generation. Some trembled, and obeyed; but the far greater part scoffed, continued impenitent, and jeeringly alleged, that, as the corn-mills in that part of the world, were turned by water diverted from its natural channel, which must be no less offensive than impelling a current of air upon uncleaned corn, he ought, on the same principles, to interdict the use of meal ground in that manner, and insist on his followers adopting the scriptural method of grinding by querns; or else eating the grain kiln-dried as the ancients did, under the designation of parched corn. And so apt is sinful man to overlook his duty, when his interest is in the way, and so readily does the habitual practice of any sin sear a man's conscience as with a hot iron, that there now is no instance of a farm wanting fanners, and every farmer uses them without compunction.

'The state of farm-steadings is much altered, especially in the low part of the county, from what it was forty years ago. In general, the dwellinghouse consisted of only a ground floor, with rarely a half story, and only sometimes a garret over one end. It was divided into several apartments by the furniture; but the divisions were seldom convenient, and far from being elegant, or decent. It bounded the north side of a square court. The

* At Abernethy.

The stables and byres stood on the east; the barns on the west, next the stack-yard, each having two doors, one in the west, and another in the east side, directly opposite, for the purpose of admitting and emitting the wind, in winnowing. The south side of the square was frequently open. In the centre of the court the dunghill was placed, the verge of which not unfrequently extended close to, and sometimes within the threshold of the dwellinghouse door. In situations where it could be procured, the walls of the buildings were constructed of stone and mortar, of clay or loam, or of alternate layers of dry stone and turf: but in the clay soils, they were built of clay or mud. In the Low Country, they were thatched with straw and divot, or with reed; in the Highlands with heath. In a moist summer, I have seen a crop of oats or wheat come to maturity on the roof of one of these houses; and grass that might have been mown was not uncommon. Such buildings were continually needing reparations, and never were comfortable habitations. The windows had sometimes a few inches of glass, and often none at all. There commonly was a chimney in one end, often in both, and always a large funnel suspended over the kitchen fire-place, which seldom vented well. But now, the houses on every considerable farm have walls of masonry; and the most modern ones roofs of foreign fir, and blue slate. They are usually of two stories and a garret; and some of them conveniently, and even neatly fitted up within. The offices, too, are built in the same substantial manner, and more conveniently arranged than formerly. Less barn room is necessary since the introduction of thrashing machines; one barn being sufficient. The method of foddering cattle too in straw-yards, was formerly not in use; consequently, much more byre-room was needed than at this time: more especially, as the working oxen were kept till they were six or eight years old. The expense of buildings is commonly defrayed by the landlord, and the tenant taken bound to keep them in repair. There are, however, exceptions to this. Sometimes the tenant drives the materials; sometimes he pays five per cent. on the landlord's outlay: and I lately knew an instance, where the proprietor insisted on having seven and a half per cent. for what money he should lay out in building, and the tenant to uphold. This certainly is not a bad way of laying out money.

But though farm-houses are in general much more comfortable than formerly,—many of them neat, and some even elegant,—yet there are estates in the Upland, or Highland part of the county, on which much remains to be done in that way. On one very extensive estate, part of which lies in Aberdeenshire, no leases are given, and no allowance made for building. It is superfluous

to add, that not a house is to be seen on it, for perhaps twenty miles, fit for the residence of a human being, though the climate is the most stormy of any in the central Highlands. Having occasion, some years ago, to stop at one of these farm-houses, which, as it was likewise an inn, consisted of two stories, I expressed some dread of falling through the floor, and asked the tenant why he did not get the landlord to repair his house? The answer I received was, that he meant soon to repair it himself; but that the landlord would not allow two pence to repair a house on his property, though the tenant and his family should lye in the fields.

A considerable part, perhaps half of the arable land of Perthshire, is unenclosed; and the far greater part of what is enclosed is not fencible. In many places, where stones can be obtained at a cheap rate, the fence is a dry stone wall, frequently the Galloway dike. These are deemed sufficient enclosures: but a number of years being required to raise a thorn hedge into a fence, on the best soils; and much of our land being only of a middling quality, a nineteen years lease is barely sufficient for that purpose, even when carefully attended to; which seldom is the case. The tenant being strictly bound to pasture his fields, and no dead fence being formed to protect the young thorns, the depasturing stock never fail to break through in numberless places: and every farmer knows how difficult it is to bring forward these gaps with the rest of the hedge; yet this is the state of two thirds of the hedges in the county. There are two kinds of land, of quite different descriptions, on one of which the utility, and on the other the expediency of fences are problematical. The first of these is the rich soil on the rivers, continually kept in tillage. Here fences are of no use, as there is no pasturing: and they must be hurtful, by occupying part of such valuable ground. So, though there is a ditch or open drain at the end of every field in the Carse, few of these have banks, or are meant for fences. Indeed, so great an aversion have the farmers there to take up their land with fences, that, excepting gentlemens' parks, there hardly is one of any kind, on the sides of the turnpike road, which runs through the middle of that district, from Perth to Dundee.

Again, the propriety of enclosing heath and mountainous land, naturally of little value, is not very apparent; because, although, by so doing, it doubtless is rendered more valuable, yet not in a degree commensurate to the expense.

The proprietor sometimes encloses, and sometimes the tenant; and there are instances of the tenant agreeing to uphold, and leave the enclosures sufficiently fencible, and at same time pay annually five per cent. on the expense of making them.

Fifty

Fifty years ago, there was little enclosed land in the county, excepting around gentlemen's houses; and even of that there was not much. Stock of all kinds was herded in summer; but when the corn was got in, every kind of animal went at large, and every field was common to the whole neighbourhood. This practice can hardly be said to be given up, in some parts of the county, even at this day: But in the more improved places, though there are few enclosures sufficiently fenced, every farmer endeavours to keep his beasts on his own possession.

Till within these twenty years, there were no turnpike roads in the county, excepting a few miles (nine or ten) from the county town towards Edinburgh. But, now, they are to be met with in the Low Country, in almost every direction. These, in general, have been lined out with judgment, substantially executed, and for the most part kept in a state of good repair. But the Edinburgh road, having been made at a time when more attention was paid to have a straight course than a level one, is the most inconvenient and dangerous up and down hill road that is any where to be seen; and as a very easy line was at hand, it is inconceivable what could induce the surveyors of those days to fix on the present one. So many of our roads being made turnpike, the gentlemen of the county have been enabled to appropriate the statute labour to the by-roads; and though much remains to be done on these, it must be granted, that this, together with the commutation of labour, has effected a great deal. Four lines of military road run in a south and north direction, through the Highland division of the county. Some, if not all of them, were made under the superintendance of the late General Wade. Of course, an equal disregard is paid to going to the bottom of a ravine, and over the top of a hill. But these being seldom used by heavy carriages, the inconveniency is the less felt.

Before roads were made, the county was in a state of which we of the present day can have only a slight conception. As the ways then in use were merely hollow tracks, every shower converted them into a pond, or puddle; and in many places, they were the beds of perennial rivulets. In the deep clay districts, it was often impossible to transport the produce of the country, either in carriages, or on horseback. Even in dry weather, travelling was extremely inconvenient, owing to the manner in which the mud was cut up and dried.

By means of the bridge built about forty years ago at Perth, over the Tay, the communication with the east and north parts is rendered much more safe and easy: and the one now building over the same river at Dunkeld, will have a tendency to render

travelling by the Highland road much more common than at present.

There is no market in this part of the kingdom where the grain to be sold is pitched. All sales are made by sample. Besides what is bought for home consumpt, and what is purchased for exportation by resident dealers, agents for corn merchants in other places, attend the weekly markets in Perth, and Inchture, a village in the Carse of Gowrie, and purchase from the farmers. The grain is usually delivered, from the farmer's sacks, into the vessel, at the several shipping places on the Tay. Most part of the barley, and some potatoe oats, go to the distilleries on the Forth. The wheat is sent to London, Leith, Glasgow, and even Liverpool. Formerly, the quantity of grain exported was inconsiderable; and there was an annual importation of oatmeal into the port of Perth from the shires of Berwick and Banff to a great amount, and of flour from London; whereas, now, Marklane receives large and annually increasing supplies of wheat from the Tay. Indeed, part of the barley now shipped is rather sent to be manufactured for our own use, than exported, as it is returned in the form of spirits, porter, and strong ale. Fifty years ago, little malt spirit was drunk, and no malt liquor was imported. But our fathers speak in raptures of the home-brewed twopenny of those days; and it must be admitted, that if it merited half the encomiums bestowed, it was a wonderful beverage, considering the price. They tell us that, for threepence, a strong-headed man was intoxicated; and that, if thrown into the fire, this ale blazed like ardent spirits. The surplus grain of the western part of the shire is sent over land to the manufacturing country on the Clyde.

I have known of a few cargoes of potatoes sent from Perth to Leith and Newcastle; but it certainly is not the best management to plant potatoes for sale on farms, without the reach of town manure.

There is a good deal of orchard ground in the Carse, chiefly apples and pears, which is found to turn to good account. A considerable extent of land along the northern margin of the Carse, and of the Lower Strathearn, being well sheltered from the north-east, might be very profitably appropriated to this purpose. Formerly, much more fruit was grown in the low part of the county than at this time; every religious house and every petty laird having an orchard; but these having come into the hands of farmers, were but ill looked after, and so have either gone to decay, or are completely grubbed up.

There is a great deal of coppice oak in this county; more, it has

has been said, than in all Scotland besides. This is principally to be found on the steep banks of rivers, and the skirts of mountains in the Highlands. It is said to be the most profitable use to which such land can be applied, since the price of bark rose so high. There is likewise some fir-wood, part fit for masts and bolteprits, in the remote places of the county; but the expense of conveying it to market, is a heavy drawback upon its value. The Low Country is at present more denuded of timber than it was twenty years ago, and than it will be forty years hence, when the young plantations shall have grown up.

The right of fishing for salmon in the rivers Tay and Earn, belongs to the proprietors of the lands on their banks; in general, each having a right to fish in that part of the river opposite to his estate. In many cases, these were formerly allowed to go as an appendage, in letting the adjoining farms. The fishing, which is by draught nets, was performed by the farmers and their servants, which was but bad economy; for the returns from the water, being much quicker than those from the land, were often most attended to. The proprietors, however, at length saw the necessity of making a different arrangement. The farms were let by themselves, and the right of salmon fishing on the several estates was let to other people, which, though disadvantageous when parcelled out among the adjacent possessors of land, has since been the source of some of the greatest fortunes that ever arose from trade in Perthshire. Of late years, the number of salmon caught within the county by draught nets is much lessened, owing to the stell fishings nearer the mouth of the Tay. The demand having at same time increased, the price has risen at a rate disproportionable to that of every other article. Forty years ago, the best fish (thirty to forty pounds weight) were readily parted with for one and sixpence a piece. They now bring twenty, frequently forty times the money. Formerly many were used in the country, even by farm servants: the remainder was sent in a fresh state, overland to Edinburgh. London is now the principal market, to which place it is sent in fast sailing vessels, part pickled, part fresh packed in ice.

The condition of farm servants, in common with most other classes of society, has been much ameliorated of late. The money part of their wages has increased in the proportion of eight to one, within the recollection of many persons alive; thirty pounds Scots as a year's wages for an able-bodied ploughman, being then as current as twenty pounds Sterling now. They victualled in their master's house, whether they had families of their own or not. Their daily bill of fare, was oatmeal porridge,

with milk or beer, for breakfast; broth, or soup made of greens, peas, hulled barley and oats, with, sometimes, butcher meat, or in default of that, salted salmon, butter, cheese, or milk, for dinner; supper consisted of porridge or sowens, i. e. oatmeal jelly, with milk. At present, unmarried ploughmen are always lodged, but not boarded. They receive, in place of board, six and a half bolls of oatmeal in a year, salt and milk. The allowance of milk being a chopin of skimmed, or half that quantity of new milk, thrice a day. When milk is scarce, beer or money is given in lieu of it; and frequently, when the farm is a led one, a cow is allotted for every three or four servants. Married ploughmen have commonly a cottage, and small garden, valued at thirty shillings; a cow kept the year round, worth six pounds; as many potatoes planted as may serve their family; six and a half bolls of meal; and the rest of their wages in money. In situations where the cow's milk can be sold new, her keep is worth double the money stated above. Their cottages, though of late years much altered for the better, are nevertheless susceptible of further improvement, by such means as ceiling, and plastering, enlarging the windows, and substituting glass for the boards presently in use, and by laying the floor with some more cleanly material than earth. Neat houses would in some measure help to introduce that cleanliness among the lower orders of our countrywomen, with the want of which they are at present reproached; a reproach which it is almost impossible for an inhabitant of the wretched hovels still standing in some parts of the county to avoid. If a married ploughman and his wife are at all industrious, and meet with no uncommon misfortune, they find little difficulty in bringing up their family in a suitable style. They are, in fact, in much more comfortable circumstances than a large proportion of the small farmers in the upland parts of the county, whose life is a life of anxiety, toil, and privation of all the comforts, and many of the necessaries of life. I cannot say that our farm servants are chargeable with that dissipated life which has been ascribed to their brethren in other counties. They certainly are the most sober class of men in the county; nor have they that pilfering disposition, which is so vexatious to the English farmers, whose servants having received no education, are ignorant, irreligious, and of course immoral: nor have they that rude, saucy manner which characterizes the ploughmen and carters around Edinburgh.

Farm labour certainly costs more than it did forty years ago, but by no means in proportion to the rise in wages since that time. This is owing to recent inventions and discoveries, by which human labour is facilitated and abridged. For instance,

a man and pair of horses will plough a third or half more in a given time, than two men, one pair of horses, and three pair of oxen did formerly. By one yoking or journey of a roller and pair of horses, more cloddy land is reduced, than by fifty persons with mallets, as was the practice thirty years ago. Fallowing, horse-hoeing and artificial grassing have superseded the whole summer's work of pulling thistles. The thrashing machine, by shortening barn-work, allows opportunity for ploughmen to perform many by-jobs, for which a labourer used to be hired; and the good roads enable one man to carry as much grain to market, as formerly could be done in the same time by four or six.

Owing to great diversity in the circumstances of Perthshire farmers, there is no general standard applicable to their character. Great part of the county is parcelled out into small farms, and there are very few which in Lothian would be reckoned large. * Many of the renters of small possessions, with their wives and children, are subjected to greater drudgery, and fare harder, than the families of farm servants on the richer soils of the county; yet, the ambition of being their own masters, induces them to persevere. The condition, however, of farmers, gradually and imperceptibly ascends from this, to that of those who live in ease and even opulence. Their manners and mode of living commonly correspond with their pecuniary circumstances. Some of the first rank, dress and keep house in a somewhat elegant style; and their social manners are every way fitted to their station. But, though they may not be destitute of the lighter accomplishments, few mere farmers among us have the advantages of a liberal education. We are not however to infer from this, that they are deficient in professional abilities. One of them was appointed to survey the counties of Kirkcudbright and Galloway; and though his report, † like that of some other surveyors whom we have all heard of, Sir, does not seem to have obtained universal approbation, this might be as much owing to the prejudices of the Gallovideans, as the 'haste' of the surveyor. Farmers of the middle class, though frequently unacquainted with the best modes of cultivating the soil, are possessed of a much

* The moſt common ſize, is that which requires two ploughs, the average extent of which may be about eighty acres. Some ſheep farms in the Highlands contain ſeveral thouſand acres. In the Carſe are ſeveral farms of three hundred acres; but the greater part in that diſtrict are much ſmaller. And the average ſize of arable farms in Perthſhire is much leſs than in the corn counties ſouth of the Forth.

† See Far. Mag. vol. 8. page 76.

larger stock of knowledge, both general and professional, than their forefathers; and their mode of living is also much improved. Their houses and furniture are more neat; their dress more becoming; and their tables better covered. But, in one respect, there is a sad falling of: Religious controversy, and the investigation of abstruse points of faith, the favourite pursuits of our fathers and grandfathers, are now disregarded. Politics engross every body's attention, excepting perhaps several of the old storemasters on the West Ochils, with whom the opinions of the days of 'Cromwell and the Covenant' still predominate.

On the whole, Sir, though the present race of farmers in Perthshire, taken collectively, cannot in many respects vie with their brethren in the south-eastern counties of the kingdom, they certainly rank higher in the scale of society than those of some other counties do, or than their own fathers did.

The principal public burdens that affect agriculture, are, the statute labour, poor-rates, and the property tax.

The construction of good roads is always the first step towards the improvement of any country; and when the statute labour is commuted, and the money faithfully and judiciously laid out in forming and repairing them, it is so far from being a burden, that in no shape can so small a sum be more beneficially applied for the farmer.

Poor-rates have not hitherto been exacted in this county to a great extent; but the example of England ought to be a warning to us, and induce us to withstand any unnecessary extension of the system.

The property tax is a grievous oppression to the farmer, not on account of its amount, for, if equitably assessed, this mode of raising a part of the revenue has advantages over most others; but because the *data* by which his income is calculated, are unfairly assumed. No other class of men pay for income which they do not actually receive; but, in nine cases out of ten, the farmer's income from new tacks, is not half the amount at which it is taken by this law. Nor does there appear any good reason why the income of a merchant or manufacturer is not taken from the amount of his transactions, as well as that of the farmer; nor why the farmer's real profits are not considered as a proper criterion by which his just proportion of this tax may be ascertained.

It is no less exceptionable on another account. Much has been said against the tythe system, and with great justice,—for of all absurdities, it is the most absurd; yet the property tax, though only a modern regulation, has a similar tendency. Both operate as direct taxes on industry. In this, however, they differ: Any attempt

attempt to abolish the exaction of tythes would be opposed by all the weight of a numerous and respectable body in the state, whose inclinations the civil power has of late years shewn a strong disposition to gratify. But a reasonable modification of the property tax, as far as it affects farmers, we presume, requires only to be asked by those who feel aggrieved.

P—N.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

On the Preservation of Potatoes.

SIR, *Perthshire*, 1807.

I HAVE witnessed a practice upon inferior, but dry soils, in a climate rather late, which, I believe, may be useful to farmers similarly situated. It is a mode of planting and using potatoes, without the trouble of lifting and housing them in autumn.

It is well known, that the potatoe is a valuable and nutritious food for either cattle or sheep; and that feeding sheep with them is much safer than feeding cattle. They are planted, in the usual manner, in drills, about the ordinary distance; and if part are needed at home, the whole alternate drills may be taken up, or what number may be thought proper, and the earth of such drills, after being well cleared of potatoes, turned upon the remaining ones, any time before the frost, by two bouts of the plough for each drill. This will be found a sufficient covering for them during the winter, and will resist any degree of frost, so as to preserve them perfectly fresh and sound, and fit for either cattle or sheep. But sheep, from the foresaid circumstance, as well as from what follows, are by much the best stock for consuming them. For the farmer has only to turn out one or more drills by the plough in the spring *per* day, according to the number of his sheep, and they will follow the plough and pick them up, without any further trouble. It is only necessary to proportion them to the number, that none may remain, in case of frost through the night. This practice can only be profitably adopted where wheat cannot be raised to advantage. Barley or oats, are the crops conveniently cultivated in this case. According to this method, the root keeps better from springing than when in heaps, either in pits or within walls; and sheep can thereby be easily kept on till the grass in May.

If any of your readers think it worth while to try this mode of protecting potatoes from frost, and using them with sheep in the spring months, perhaps the above hints may be of some advantage. I am, Sir, yours, &c. OBSERVATOR.

P. S.

P. S. At planting, it is necessary to determine what proportion of the crop may be needed for uplifting in autumn;—as the part of the field which is not to be thinned, must be planted so wide in the rows as to admit a ploughing to earth up the drills.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

SIR, *Receipt for Killing Rats and Mice.*

As rats and mice are very destructive to corn in all its stages, I beg the favour you will insert the following recipe for killing them, which I found among the papers of a late friend. I had no opportunity of trying it; but if any of your numerous correspondents will make the experiment (particularly that of preserving the corn in stacks), and communicate the result to the public through your useful Magazine, it will greatly oblige your constant reader,

Ross-shire, July 25th, 1807. A. F.

P. S. I should be glad to know the best method of destroying sparrows; these birds being eminently injurious to corn in hedged farms. A. F.

For killing Rats and Mice.—Take one pound of apuoka; boil it among two pints of sixpence beer into one; bottle it up; put in one ounce of tincture of Valerian; and shake the mixture every morning for a month. When you intend to kill rats or mice in a house, barn, kiln, miln, or granary, &c. put one ounce of the mixture among four pounds weight of oat meal, adding thereto twelve drops of lemon essence. If you intend to kill mice, take one ounce of oil of sasafrax, and put twenty drops thereof in the above. When you intend to attract the vermin, take one ounce of tincture of musk, and put in four drops among four pounds weight of mixture, which will attract them to that bait. But if you intend to kill rats without mice, you keep out the musk. And in preparing this thorough and genuine receipt for destroying rats and mice, keep your head from above the stove, else it will prove death.

For keeping Stacks clear of Rats and Mice.—Take one pound of nitre and one pound of alum; dissolve them together in two pints of spring-well water; get a firlot of bran and make a mash thereof, putting in two pints of the above liquid, and mixing all together. When you build your stacks, every second course take a handful or two of said mash and throw upon them, till they come to the easing: allowing your stacks to stand twenty years, rats or mice will not come near them. This is the genuine receipt for destroying rats and mice.

TO

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Remarks on the Inquiry into the Nature and Fluctuation of Corn Markets, &c.—p. 22.

SIR,

I COULD not help smiling at the formal pomposity with which your correspondent Gordius opens his 'Inquiry into the Nature and Fluctuation of Corn Markets,' &c. &c. inserted in the 29th Number of your excellent Magazine. Had the introductory part of that paper communicated a new discovery, of the utmost importance in the moral and physical world, it could not have been ushered in with greater parade than the long string of truisms of your correspondent. No Roman Catholic could count over his beads with more holy fervour than Gordius has enumerated these obvious truths. I was not, at the time of reading the paper at first, nor am I yet, prepared to take up the matter in a serious, or in a ludicrous point of view. If a man draws in his chair, and tells me, that food is of more consequence to me than a pair of pantaloons,—that bread is the staff of life,—and a thousand other articles of intelligence of a like nature, I would be at a loss whether to pity him for his silliness, or knock him down for his impertinence. My feelings, with regard to your respectable correspondent, were exactly of that description, at my first acquaintance with him; and it is needless to disguise the impression that his *exordium* made upon my mind.

Your correspondent informs us, 'that not only many of the commercial dealers in, but the actual propagators of corn, have been reduced to bankruptcy.' This is all very true; but why need he announce a fact of so much notoriety, with all the gravity and importance of an original discovery? Every trader is more or less liable to the misfortune of bankruptcy; and it need not, therefore, excite any surprise in the mind of Gordius, that a dealer in corn, who is nothing more than a dealer, should now and then be in a similar predicament. If, likewise, a corn merchant should sometimes make his appearance in the Gazette, I believe it will readily be admitted by most people, and even by Gordius himself, that the raisers of the raw material add less to the number of unfortunates than any other description of men.

It ought to be recollected, that the corn trade is the most extensive of any carried on in a commercial country. The dealers in it must, upon that very account, be more numerous than the dealers in any other commodity; and, *cæteris paribus*, bankruptcies must always be in proportion to the number of those who play the game. Why then should your correspondent express the smallest surprise, that the traders in that article should sometimes be reduced

duced to bankruptcy?—and ought he not rather to wonder, that this misfortune happens, comparatively speaking, to so very few?

Gordius says, 'Certain as the demand for it always must be, it is equally uncertain if the returns will be sufficient to replace the capital of either (meaning the dealers and farmers) with a profit.' Were it a matter of uncertainty if the returns from the corn trade would be sufficient to replace the capital employed, your correspondent may believe, that it would very soon cease altogether; or rather, that the word never would have had a place in our vocabulary. Individuals enter into, and carry on a trade with no other view, but that of self-interest: and, should they continue losers for any length of time, they will learn to abandon the further prosecution of it. No trade can possibly support itself, unless the dealers therein ultimately make profit;—and, as that of corn has been carried on from the very commencement of commercial intercourse, it must be, upon the whole, beneficial to the parties concerned. But, independent of reasoning altogether, is it not a notorious fact, that, though money has been lost by some individuals in the corn trade, many large fortunes have, on the other hand, been realized; and that scarcely a farmer, or, in the *elegant language* of Gordius, a *propagator* of corn, with common sense, and common honesty, ever has failed in his circumstances?

It may be very true that the corn trade fluctuates considerably; but fluctuation does not *peculiarly* belong to it, as asserted by your correspondent. The cotton goods of Manchester, the hardware of Birmingham, the muslins of Glasgow, and the cutlery of Sheffield, rise and fall greatly in their prices according to the circumstances of the times. The variation in the price of these different articles is not so striking as that of corn, because not of so indispensable necessity; but, that the fluctuations are in reality as great, cannot well be denied.

But, even supposing the price of corn to be as fluctuating in its nature as represented by Gordius, it does not necessarily follow that the trade is a losing one to the individuals engaged in it. By the very term *fluctuation*, if there be great falls, there must be great rises also in the price of the article; and a person may be a loser one day, and as great a gainer the other. Fluctuation, it is perfectly evident, cannot possibly exist without these ups and downs. There would be no such thing, if the scale remained for ever equally balanced. The two extremes, when condensed, form a medium or average which is truly to be considered as the price of corn to the consumer, and, in like manner, to the seller. A person may lose 20*l.* at a sitting at the gaming-table; but he knows

knows very well, that, if he plays with the same persons, and at the same stake, all the year round, he will be no great loser, if at all, in the end. It is just so with corn, and with all other trades. A person with the requisite capital, engaged in either, seldom loses much by a fall in the value of the commodity he deals in, as, at all events, he has an equal chance of advantage from a rise at other times.

It is said that the corn trade has one feature peculiar to it;—'it now and then presents *fit opportunities for speculation.*' I really was not aware, till now, of all speculation being confined within the limits of the corn trade alone, and that no person ever made large purchases of any other commodity with a view to a future rise on the price of that article. I had been accustomed to believe, that every trade presented more or less fit opportunities of speculation, from the very nature of the thing; and my belief never was attempted to be shaken, till Gordius promulgated his sentiments upon the subject. How so absurd an idea ever found a footing in the imagination of a person, in his own estimation capable of writing upon a question certainly of some difficulty, it is no easy matter to conceive. What would the merchants of Liverpool and Glasgow say, if your correspondent was to tell them, upon 'Change, that nobody ever speculated upon cotton or sugar?

It is a favourite argument with your correspondent, that, with the restoration of the blessings of peace to an exhausted world, corn 'will become universally plentiful, and consequently cheap.' That corn may then become more plentiful than it happens to be at present, I do not pretend to deny; but that this effect *must necessarily* follow from that event taking place, I by no means admit.

The causes stated as likely to produce this unusual plenty, are, the countenance and encouragement which agriculture receives from every true patriot; the withdrawment of capital from other branches, to be invested in the cultivation of the earth; and the improvement of immense tracts of waste ground, not only in this country, but on the continent of Europe. There can be no doubt but that the cultivation of a greater space of ground will produce an additional quantity of grain, and that even a greater quantity may be raised upon the same surface by superior culture. The causes mentioned by your correspondent, as likely to be productive of a greater quantity of grain, resolves into the simple truism, that if more corn be raised, there will be more corn. This cannot be denied; but other causes may come into operation, so as to derange the natural effects which this additional quantity of grain might otherwise produce. An increase in the human species, going hand in hand with

with this augmentation in the quantity of grain, or a greater consumption upon the part of individuals, might put matters, in regard to plenty, upon the same footing exactly that they were before the additional quantity of corn started into existence. It is obvious, therefore, that no argument arises in favour of a greater plenty of grain from an increased width of cultivation: a greater quantity will no doubt be produced, but that is all.

The term *quantity* of grain, is an abstract idea, isolated and totally unconnected with any thing else,—meaning a million, or any other supposeable number of bolls or quarters of grain. The term *plenty* of grain, on the other hand, is a relative idea, always in conjunction with something else; for example, with a greater or less number of consumers. Supposing one million of bolls of corn to be the produce of a particular district in the time of war, and that two millions are raised at the conclusion of hostilities, it is very plain, that double the quantity is raised. It does not follow, however, that the grain which, in the period of peace, has been raised in double the quantity, should be a whit more plentiful than it had been during the continuance of war. If either the consumption of the people be individually greater, from an increase of opulence among the consumers, or if there numbers be doubled, there cannot possibly be a greater plenty of this article than before.

Let us suppose, that the number of inhabitants of this country is ten millions, and that of bolls of grain to be five millions. At the conclusion of the war, we shall further suppose, that the grain, by a superior and greater width of cultivation, has increased in quantity to ten millions. Did the population of the country remain at the ten millions, there cannot be the smallest doubt, but that, upon this supposition, there will be a greater plenty of grain. But who is to arrest the increasing population of the country, and prevent the sum total of inhabitants rising from ten millions to twenty? If the population increases in this ratio, then the same proportion takes place as before, between the number of inhabitants and bolls of grain; and, of course, the same effect is the consequence,—namely, the same identical plenty of grain in both cases.

The population of every country rises or falls with the plentifulness of grain; and an augmentation of numbers is as necessary a consequence of plenty of provisions, as a decrease is that of scarcity. Experience and history teach us, that these two will for ever go hand in hand. With an addition, therefore, to the quantity of bolls of meal in a country, there will, to a certainty, be an increase in the number of mouths for the consumption of the grain. Your correspondent, however, seems to have overlooked this very obvious consideration; and while he took

for

for granted an increase in the quantity of grain, he supposed the absurd anomaly of a limitation to the further increase of consumers. The five millions of bolls of corn had, during the war, supported a population of ten millions: for the same reason, and upon a like principle, the ten millions of bolls of grain will raise the number of inhabitants to twenty millions. Now, twenty bears exactly the same relation to ten, as ten does to five; and therefore, the relative quantity of mouths to bolls, is exactly the same, —or, in other words, the plentifulness. I make this statement in an arbitrary way, without any reference either to the actual state of population or consumption.

It would appear that your correspondent has either confounded the meaning of the term *plenty* with that of *quantity*, conceiving them both to be the same; or has taken the fact of 'universal plenty' for granted, without the shadow of a proof. The difference between the two terms is easily settled. A greater extent of cultivated land will produce a greater quantity of grain; but plentifulness, though it may happen to be, is not a necessary attendant upon an improved and extended cultivation.

It is asserted by Gordius, that 'our manufactures could not be carried on where provisions are dear, to the same advantage as where they are cheap. In our competition with other nations who possess such advantages, we would be cut out of every foreign market.' If the price of a yard of muslin depended entirely upon the price of meal,—if a yard of the former was two shillings, because a peck of the latter was one shilling,—then, of course, the muslin would be four, if the meal was two; and your correspondent would be in the right. But he ought to have recollected, that the price of provisions is not the only thing that enters into the price of manufactures. The machinery employed in the manufacture, the dexterity of the tradesman, and a thousand other particulars, affect more or less its price. If two workmen of equal dexterity, and without the aid of machinery, manufacture a particular article, then I am free to admit, that it must necessarily be performed at a less expense by the one who has food at the cheapest rate at his command. Other things being equal, dear provisions must necessarily produce dear muslins, or any other article of manufacture. But, on the other hand, if another workman has a double portion of dexterity,—or if he has the advantage of the assistance of machinery,—then he may manufacture muslins as cheap, if not cheaper, than the other. This is exactly the case with the manufacturers of Great Britain. Provisions are unquestionably more extravagant here than they are upon the Continent; yet, still, we manufacture every commodity which depends upon manual dexterity or machinery, much lower than they can possibly do in a cheaper country. According

cording to your correspondent, England, instead of being the seat of all the arts and manufactures which contribute to the conveniency or luxury of mankind, ought to be nothing but a deserted workshop. Really, it is incumbent upon people who pretend to reason in the face of common sense, to inquire a little how facts stand, before they insult the understanding of their readers. If your correspondent, instead of reasoning, had only opened his eyes upon the flourishing state of English manufactures, he never would have ventured upon an assertion so much in the face of all reasoning and fact.

It is said by Gordius, that 'by means of such rapid improvement in agriculture as is at present going on in Scotland, and will in that case take place also in England, there can be no doubt of our being able to meet the increasing consumpt, from any addition which can be supposed to take place in the population.' If the population of a country could possibly increase, independent of the abundance or scarcity of food, I should be exceedingly terrified at the supposed addition which nature in that case would make to the present numbers of mankind. Were we to suppose a growth of human population as rapid in England as it is in the newly settled parts of the Continent of North America, with the probable increase in the production of human food, a collision of a most dreadful nature would take place. There would, upon this supposition, be more mouths than food; and, of course, the consequences of such an inequality would be frightful even in idea. Did I think, as your correspondent does, that the feeding of a supposed population depended upon an improved cultivation of the ground, I should doubt much if the means were equal to the end. But the fact is, that gentleman has mistaken the thing altogether. He supposes that population *precedes* the food which is to support them, when it is most evident that the latter must go before the former. It would not be more ridiculous to figure a cart walking in the front of a horse, than to imagine that a human creature could possibly peep into the world before the necessary quantity of food was prepared for its subsistence. I have already demonstrated, and I need not do it again, that the two must, of necessity, always bear a relative proportion to each other, and that food is a power always retarding or accelerating the population of a country, according to its plenty or scarcity. It is for these reasons, and not from any dependence upon an improving agriculture, that I can contemplate an increasing population without fear or trembling. I do not feel any alarm for the supposed danger; because I am confident that, from the nature of things, it cannot possibly exist.

The cheapness or dearness of a particular commodity depending

ing upon a variety of circumstances which may or may not happen to exist, is not susceptible of so easy a solution as quantity or plentifulness.

The price of grain, and of every other commodity, is more or less increased nominally; of course, the value of money is depreciated by the taxes which at present bear so heavy upon the people of this country. As the *modus operandi* of taxes upon the price of commodities, may not be palpable to all of your readers, a few observations upon the present occasion may not be altogether improper.

Let us suppose, as unfortunately happens to be our lot, that three hundred millions have been expended in wars, which ministers, who never do fight, are ready enough to begin. This large sum is expended, and fifteen millions *per annum* must be raised to pay the interest of the principal. It has become a debt affecting the collective wealth of the nation, and, of course, that of every individual composing the great public body of the state. If a gallon of rum, part of this wealth, was, previous to the creation of this three hundred millions of debt, worth ten shillings, it will, after the imposition of taxes to the annual amount that I have mentioned, be of twenty shillings of nominal or money value. If this tax of ten shillings be removed, then the commodity which had been taxed will fall in price from twenty to ten, the price previous to the imposition of the tax. From these simple considerations we may learn the principle upon which taxes raise the price of commodities, and the mode in which the depreciation of money, another expression for the rise in the price of provisions, takes place. It is evident, from what has been stated, that when the real wealth of the nation, or the value of the commodities represented by the number three hundred millions, comes to be loaded with a debt of other three hundred millions, then what was, antecedent to that event, of ten shillings money value, must now rise to twenty. When money, in this state of things, goes to market, with the view of purchasing commodities, it must buy both the real price, ten shillings, and the tax, ten shillings, making together twenty. A shilling, therefore, goes only one half the length it used to do, and is worth only the sixpence of former times.

From what has been stated, it is evident, that, upon the supposition of a continuance of peace long enough to permit the present taxes to be removed, there must of necessity be a great fall in the nominal price of grain. But how far the political aspect of the present times authorises such a hope, I leave to your readers to judge for themselves. As war renders taxation necessary, it is the real cause of the rise we have seen take place in the

money price of grain. I conceive a state of hostility to affect the nominal price of corn more legitimately in this way, than by the interruption of that trade with the Continent, arising no doubt out of the war. As war causes taxation, it also necessarily and unavoidably affects the price of corn; the latter flows strictly from the former. There may be a state of hostilities, however, without the shutting up of the ports of the Elbe, the Weser, and the Ems; or this last circumstance may happen by the caprice of the Prussian monarch, even in the midst of profound peace. I think, therefore, that your correspondent, though he be perfectly well-founded in the fact, of war affecting the price of grain, is not very happy in his illustrations of the position.

Although you, Sir, be of a different opinion, it appears to me very plain, that the quantity of circulating medium of a country may, in certain circumstances, be productive of a rise or fall in the price of grain. If the quantity of grain in Great Britain be six hundred millions of bolls, and the circulating medium the same number of pounds Sterling, a boll of meal may, with propriety, be represented by a pound Sterling. If that medium be only one half, or three hundred millions, then the boll of corn will be nominally worth ten shillings only. The circulating medium is the representative of the grain or other commodity; it is the thing which a purchaser pays away, in order to procure the other, and must therefore be paid wholly away for grain. If this be the fact, and I cannot conceive it admits of a doubt, then six hundred or three hundred millions of pounds must be paid before that a number of bolls of meal can be purchased. If the circulating medium be the larger sum, then the boll of meal will be twenty shillings; and, if the other, only ten shillings. With these short remarks before you, I hope you will be convinced, that the quantity of circulating medium in a country must affect the price of grain more or less.

In one respect, the existence of a greater quantity of grain in the market at one time than at another, and a decrease of specie, resemble each other, viz. in lowering the money or nominal value of that commodity. If the grain be very plentiful, it will necessarily be cheap; and if the specie be scarce, a purchaser has little wherewithal to pay for it. Gordius, in mentioning these two circumstances, as affecting the price of grain, seems to me to have had in his contemplation this point of resemblance only, and to have overlooked a far more important one. If the cause of the high price of grain be the scarcity of the article, then the individuals of the country in which it takes place, must experience more or less the misery of want. On the other hand, if that circumstance be owing to a limited quantity of circulating

culating medium, the consumers may be just as well provided with this article as if it had been nominally cheaper from a greater quantity of specie. In former times, although meal was nominally much lower than it is at present, it was not the easier upon that account to be procured by the consumers. The tenpence, which bought the peck in those days, was perhaps as difficult to be got as the eighteenpence, the price of the peck at the present day, and therefore the then and the now consumers may be said to be upon a par in that respect. Your correspondent, therefore, when he attributes the same apparent effect, namely the high price of corn, to two separate and distinct causes, ought to have mentioned at same time the difference between the two. The reader will naturally suppose, that the two effects are exactly the same in their nature and consequences to the public, when they are indeed very opposite; and it would have been easy for your correspondent to have prevented every misunderstanding upon the subject by the little illustration of the characteristic difference I have taken the liberty of making.

'Every manufactured commodity (says your correspondent) must fall in price, *in spite of the value of the raw materials* of which it is composed, when a strong competition takes place among manufacturers.' The price of any commodity depends, no doubt, more upon the demand for it, and the quantity for sale in the market, than upon the original cost of the raw materials of which it is composed. If, therefore, there be a great quantity of any particular commodity, (or, in the language of Gordius, a competition among the manufacturers), and a small demand upon the part of the consumers, the price of that commodity will fall, and *vice versa*. Your correspondent, however, would fain make us believe, that this competition will go on for ever, and, of course, the fall subside lower and lower, when the fact must necessarily be quite otherwise. Competition is set on foot by the quantity of the commodity being less than the demand; and, of course, the moment that the latter comes to be replenished, the former ceases to operate. The fall, therefore, must stop somewhere; and the price of the article will again begin to rise from a decrease of competition, until the manufacturers get a fair and reasonable price for their work.

It is afterwards said by your correspondent, that 'the prices of grain will rise or fall without any regard to the *rent of land*.' It may be, that in a very plentiful year, or in particular circumstances, grain may be very cheap, though the rent of land may be very high. This, however, is nothing to the point, for the reasons I have already mentioned, to the satisfaction, I doubt not, of every one who takes the trouble of reading these remarks.

It is the previous price of grain which ascertains and determines the rent of land; therefore, no man in his senses will say, and yet your correspondent would insinuate as much, that the rent of land, which must and can be paid in no other way but by grain, will rise and fall independent of it altogether. The rise in the rental of the country, he may be assured, has its origin, among other causes, in the advanced price of grain; and, were that commodity to suffer a permanent fall, to a considerable extent, the rent of land would tumble in a similar proportion.

Your correspondent seems to think there is 'some reason to apprehend, that such a crisis (meaning that land has come to its height) may happen under such circumstances as we have seen markets liable to.' It is truly wonderful how alarmed some of our patriotic well-meaning people are about the fate of the country. The rise in the price or rent of land, is a circumstance that perhaps astonishes them more than any of the wonders of the present day; and they cannot contemplate its rapid growth within the last twenty years without at the same time prophesying its downfal within as many months. This is the sentiment of Gordius; and such has been the language of all our croakers ever since agricultural improvement began its career. Your correspondent, however, I presume, knows that the rent of land with us cannot fall, unless that of the rest of the world stands stock still; but he does not seem to be equally well acquainted with another fact, namely, that the rent of land in other countries keeps pace, in some degree, with that of Great Britain. If, therefore, Gordius begins to get alarmed with the monstrous increase in the rent of land at home, he may compose himself with the certainty that it is not idle in other parts, and that an universal sympathy in this particular pervades the most distant corner of the habitable globe.

He goes on, and says, 'we must allow that, keeping the population of the country *out of sight*, there can be no doubt the increased agricultural produce would soon exceed the consumpt, and overstock the present inhabitants; and, no doubt, population having *at least kept pace* with the means of supplying their daily wants, has been the cause of the prosperity both of trade and agriculture.' I really wish that your friend Gordius would attend a year or two at the school of common sense, before he again ventures to address the public. It is quite ridiculous in him to suppose, that the population of a country will stand still, while the means of subsistence are increasing; for, either more mouths will come into the world to consume this additional quantity, or the cultivators of the earth will put a stop to any further increase of that particular commodity. But the fact is, that, in proportion

tion as food is augmented, consumers will increase in point of numbers, whether Gordius will permit it or not; and it is therefore worse than nonsense to suppose such an impossibility to happen. He may be assured that these two things will always bear nearly the same relation to one another at all times, and in all ages of the world. But, at the best, his observation is no more than a truism; for, if you increase food, and stop the increase of the species, the former will become more, in proportion to the other, than it had been before. Why then did he take up the room of your excellent Magazine with such trifling as this? In this same passage, he again falls into the error of supposing that population precedes the means of subsistence, while the fact is directly the reverse. I shall not, however, again expose his erroneous views respecting this matter, as I have sufficiently enlarged upon it already in a former part of this paper.

Again, it is stated, that 'should the war become general and bloody, population would suffer in like proportion, and thereby perhaps the present balance of food and population be maintained.' This gentleman's ideas on the subject of population, are as ill founded as any that I have taken the liberty of refuting. War, which is blamed for many evils that it never occasions, does not necessarily lessen what would have been otherwise the population of the country. It is very true, that many lives are lost in the field of battle, and upon the bed of sickness; but that is no proof of any diminution in the after population. Supposing there had been, instead of hostilities, a profound peace, the population of the country, from a want of an increase in the means of subsistence, would have remained stationary, or nearly so. A war, however, breaks out, and a number of individuals fall a sacrifice to the ambition or folly of a ruler, be he royal or plebeian. What is the consequence? For a moment there is a diminution in the population of the country; but, food now bearing a higher *ratio* to the number of inhabitants than it did before, greater encouragement is held out to the increase of the species; and that increase accordingly takes place, upon the very obvious principle which I have stated over and over again, that population is always in proportion to the quantity of food. Did the means of subsistence decrease along with the inhabitants, then your correspondent would be in the right; but that not being the fact, the diminution which he supposes in the population cannot possibly take place in the common and ordinary course of human affairs.

I have to apologize for taking up so much of the space of your Magazine, with the refutation of so very obvious errors as those which Gordius has, in my humble apprehension, committed.

He tells us, that the thoughts in his inquiry 'are not common, nor are they in unison with the general sentiments of the present times.' Now, is not this the same idea twice expressed in different language,—the same character appearing at different times upon the stage, in dissimilar classes? If thoughts be uncommon, they necessarily cannot be in unison with the general sentiments of the times; for what has no existence, cannot possibly exist at all. On the other hand, were the thoughts of your correspondent common, they would necessarily be in unison with the sentiments of the public; for that is owing entirely to the commonness or universality of the doctrine. But he seems, according to my dull apprehension, to speak things that are very common, and in regard to which, there never has been, nor ever can be the smallest difference of opinion. What can be more obvious, or less disputable, than that 'commercial dealers in corn have been reduced to bankruptcy,' and a thousand other truisms, of a similar nature, scattered over every page of the inquiry? When he does presume to utter sentiments different from those generally entertained by the bulk of mankind, I am sorry to say, that he is for the most part ill founded in what he advances. Having already said so much, it would be improper in me again to go over the same ground. But, once for all, I would advise him to look a little into the science of political economy, which seems to have attracted little or none of his attention, before he comes again to the public bar. That the advice is called for, I have to appeal to the arguments in the former part of this paper; and I should be the last man in the world to bring forward a charge of incapacity against any of your correspondents, without at the same time presenting my proofs. I remain, Sir, Yours, &c.

Glasgow, 3*d June* 1807. A CONSTANT READER.

NOTE BY THE CONDUCTOR.

WHILE the Conductor accords in sentiment with '*A Constant Reader*' in most of the principles illustrated in the above intelligent communication, he feels himself obliged to intimate his dissent from the doctrine laid down concerning the degree of influence which the quantity of circulating medium has upon the price of grain, being fully satisfied that an increase of medium, independent of other circumstances, only enables the purchaser to purchase at higher prices, when the quantity of grain presented for sale is below what is actually demanded. The Conductor, therefore, adheres to what he stated in his Note upon Gordius's paper, and believes that no man in trade maintains an opinion materially different. In the way that this point is illustrated

trated by 'A Constant Reader,' it would necessarily follow, that the whole circulating medium of the kingdom is appropriated to the purchase of grain; and, were this the case, not a doubt could remain, but that the plenty or scarcity of that medium regulated the market value of grain. Mankind, however, having other articles to purchase with the circulating medium besides grain, do not give a halfpenny more for a bushel or boll, than called for by the actual state of markets, reserving the remainder for other purposes. This is so plain, that no illustration is required.

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TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Description of a Thrashing Machine, recently invented in Perthshire.

SIR,

FOR some months past, we have heard of a new kind of thrashing machine invented in Lanarkshire, capable of thrashing the crop of a middle sized farm, yet only costs twenty guineas, which must be a considerable acquisition to those who occupy farms of that description. Another, no less useful for small farmers, has been invented in Perthshire. This is one of the scutching kind, moved by water, which may be erected for ten pounds. It consists of an upright axle, having scutchers fixed across near the top, in the usual form; but, instead of having this axle turned by a pinion on its lower end, worked by a cog wheel on one end of a lying axle, on the other end of which was the water wheel,—this machine has no wheel at all,—only a number of pieces of plate iron, fixed on the circumference of the lower end of the axle, forming radii all around. These receive the impulse of the water through a trough; are fastened by having one of their edges inserted in a groove or mortise, cut about an inch deep into the axle, and by having a notch cut half an inch into both the upper and lower edges of the plate, flush with the periphery of the axle; so that, a stout iron hoop being put on the axle below the plates, its edge fits into the notch on their under edge; and another hoop secures their upper edge in a similar manner. These iron plates are about nine inches and a half in length, exclusive of that part which is sunk in the wood; are eight inches and a half broad at the end next the axle, and nine and a half at their extreme ends. An inch in breadth of the extreme edge, is bent or turned a little, like the side of a dripping pan, the better to prevent the water from being dashed over at that edge: and, for the same reason, the upper edge is bent in the same manner, on-

ly the brim, or bent edge, is broader near the extremity of the plate than next the axle, being an inch and a half in the one place, and only an inch in the other. The lower edge is not bent. The plates, eighteen in number, are inclined forty-five degrees, i. e. they stand at equal angles between a perpendicular and horizontal plane. The water is made to impinge on them from a height of thirteen feet, at an angle considerably nearer a perpendicular. The axle is of oak, thirteen or fourteen inches diameter at the lower end, tapered to eight at top. It is evident from the size of the plates or blades, that the quantity of water necessary to drive this machine is but small; yet it is capable of thrashing from three to four bolls of oats an hour.

There can be no difficulty in adopting this invention to the drum and fluted rollers. I am, Yours, &c.

Perthshire, Aug. 1st. P—N.

TO THE CONDUCTOR OF THE FARMER'S MAGAZINE.

Concerning Free Martins.

SIR,

THE doctrine of free martins, i. e. that the female of cattle, when twin with a male, is incapable of propagation, seems to be strongly supported by the proofs referred to, in the paper of W. J. in your November number of 1806. If such instances are found to be so numerous as to establish a general rule, although some instances of the contrary may occur, it becomes necessary to adopt the doctrine as true, and not to reject it (as, perhaps, from my partial knowledge and partial attention to the subject, I have hitherto been disposed to do) as one of the many vulgar errors which have been long propagated, because never fully investigated. The object, however, is curious, seeming to point out an anomaly in natural history,—and, on this account, deserves the attention of your Magazine.

All I have to state, from my own knowledge, is as follows. On the 11th of November 1804, a cow of mine brought forth two calves, one a bull, the other a cow calf; and in spring last, the female twin produced a very good male calf. She had offered for the bull even earlier, but was not at first attended to. Yet, a neighbour of mine assures me, that a female twin belonging to him, never would take the bull,—and, at the age of four or five, was sold on that account to the butcher.

I am, Sir, your very obedient, &c.

Fife, 1807. A. M.

FOR

FOR THE FARMER'S MAGAZINE.

Letters from a Young Farmer to his Father.—Class IV.

(Continued from p. 375, and concluded.)

Nov. 4.—SINCE the finishing of harvest work, my squad has been chiefly employed in cleaning out the stack-yard, casting *gaw* furrows through the wheat lands, and turning dunghills, which are to be applied upon the clover stubbles. Some of my hands have also, on different days, been with Fairbairn at the thrashing machine; as, besides seed wheat and horse corn, about four hundred bolls of barley are already thrashed. In a conversation lately with Mr Jamieson, I was made to understand that the early part of the season was the fittest time for thrashing barley, merchants being then better disposed to make purchases than at an after period. Most of the straw has been stacked in the court or farm-yard, to be taken down occasionally for littering the wintering cattle which were last week brought from the stubbles. They are divided into three lots, each of which occupies a separate yard, and have plenty of fresh oat-straw furnished to them four times a day, it not being thought advantageous to keep a greater number together. Howard, who superintends the cattle and sheep department, tells me, that much of the after success depends upon arranging the different divisions, according to size and temper, and, in particular, upon keeping those that are polled, or without horns, by themselves. A pump-well is in each yard, which is a matter of importance. The forty oxen purchased at the summer markets are now put to the stake, and fed on turnips, three men being appointed to clean and feed them, and to take care of the hundred cattle on straw. Tups were put to the ewes about fourteen days ago, in the proportion of one tup to fifty ewes, and they are now ranging the clover stubbles. They have been rubbed with tobacco liquor and turpentine, so as itch or scab may be prevented.

The wheat seed is nearly over, all being deposited in the ground, excepting on that part of the field under potatoes last crop, to which Mr Jamieson wishes to give an additional furrow. What was sown after beans required a great deal of harrowing, before the surface was reduced sufficiently; but as fine weather prevailed at the time, the work was accomplished in a satisfactory manner. Fifty acres of the clover stubble have likewise been seeded with wheat, which will give three hundred acres under that grain next year, viz. one hundred acres after naked fallow, the like quantity after beans, fifty acres after clover, fifteen after potatoes, and thirty-five acres intended to be sown in spring after

ter turnips. The clover stubble got a double time of the harrows, before the seed was distributed; and, being well laid over in the ploughing, little of the turf was drawn up in the harrowing process. Every field is neatly water-furrowed, and the cross and headland furrows completely digged and cleared out, so as water may run off without the smallest interruption. Hitherto the ploughs have gone two journies per day; but next week Mr Jamieson proposes to limit their work to one journey of five hours and a half, and to employ the ploughmen at any odd jobs about the homestead, after their horses are foddered and cleaned.

Nov. 30.—The small patch of wheat after potatoes was finished a few days after the date of my last letter; since which, Elliot has been busy with the ground intended for beans, one half of which he has ploughed across, and the other he is now ploughing in length, intending to give this portion a cross-furrow in spring, preparatory to the drilling process. You will remember that I mentioned this plan in one of my first letters; and Mr Jamieson is resolved to give it a fair trial. There can be no doubt of success, provided the weather is dry at that season; but that provision must be risked, and indeed such risks are unavoidable in every branch of farm-management, where good weather is a necessary appendage to their successful completion. At all events, as the land is well gathered up, it must be much sooner dry in the beginning of spring than the field ploughed across the ridges, though the strictest attention was paid to water-furrow the latter in the completest manner.

A very considerable quantity of grain has been delivered to the merchant this month, three fourths of our barley being thrashed, besides several hundred bolls of wheat and oats. Fairbairn's people are seldom out of the mill, being either thrashing or dighting; and as there is plenty of barn-room, two pair of fanners are constantly employed when the latter operation is going forward. Hitherto, the working horses have been fed upon hay since the green food was finished; but now they are to be put upon bean straw, which is to be regularly tied up in bunches, under my direction, as it comes from the thrashing mill. Two feeds of oats, of six pounds avoirdupois each, are given to every horse per day; and, though lately hard wrought, they are in tolerably good condition. Mr Jamieson, about a fortnight ago, purchased four fresh horses, five or six years of age, to replace the like number that were getting superannuated, and informs me that he is always well satisfied when a greater supply is not annually required. He gave two hundred guineas for these four horses, which will show you the extent of expense required

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to support the tear and wear of his working stock. Few casualties or diseases have occurred since I came here, with this branch of the stock, and only one concluded fatally. This was with a horse affected with dry gripes, or belly ache, which ended in mortification, and killed him in twenty-four hours after he was seized.

The turnip cattle are doing well, and regularly looked after. As the field, whence the turnips are brought, is at a considerable distance from the farm-yard, two carts are constantly employed in driving them home, with an additional number on Saturday, so as Sunday's maintenance may be provided; but Mr Jamieson means immediately to store a considerable quantity in the stack-yard, as a resource, should snow fall, or frosty weather set in; a measure, undoubtedly, of material importance. I consider the expense of carriage home as not short of three pounds Sterling per acre, which in one respect might be saved, were the crop consumed by sheep on the spot; but then, how and in what manner would the immense quantity of straw on the premises be converted into dung? Holding this important circumstance in view, the system adopted must be considered as highly beneficial, even though attended with a heavy expense, therefore deserving of imitation. No turnips have as yet been given to the breeding ewes; and I understand they will not receive any till the middle of January, unless a snow storm happens before that time.

Dec. 18.—We were all much alarmed lately by a severe indisposition which attacked our worthy master; but providentially these fears are now removed, by his complete recovery. On the second day of his illness, when a violent fever was dreaded by the medical people, he sent for his five head servants, and calmly stated, that, being unable to give directions, he requested each of us to manage the work of his own department in the best way possible, till the issue of his indisposition was determined; and added, 'You all know my general intentions so well, and have acted so faithfully in my service, that I have the firmest trust matters will go on much in the same way as if I were at your head.' After signing a draft on his banker in favour of the clerk for one hundred pounds, out of which the working people might be paid during his illness, he shook each of us by the hand when we retired from the room, offering our earnest wishes for his recovery.

That same evening we had a meeting in the clerk's office, when, with a view to promote the interest of our employer, it was agreed upon, that Elliot should assume the general controul, and that each of us should submit implicitly, *ad interim*, to his directions,

rections, in order that regularity might be preserved. Orders were therefore given out in the same way as if they had proceeded from Mr Jamieson himself; and so powerful is the force of former habits, that prompt obedience was given by every one to the orders issued, though it was well known Mr Jamieson had no hand in them. I will not say that the like obedience could have been long maintained, as probably the steady discipline exercised by Mr Jamieson, like the centrifugal force of a machine, carried the system on, even when the impelling power was withdrawn. Be this as it may, I rejoice that Mr Jamieson's recovery prevented the strength of our government from being ascertained. In four days, his disorder, which originated in a severe cold, took a favourable turn, and, on the eighth day of his confinement, we were admitted to his room. He is gradually getting better, though, hitherto, he has not been out;—a caution justified by the season of the year.

I have often reflected upon the critical situation in which the affairs of a farmer are placed, when he is confined to a sick-room, and cannot help thinking, that his case is then more to be lamented than that of other classes, when deprived of health and strength, and prevented from attending on business. The chance of loss from dishonesty and unfaithfulness in those employed, may be viewed as the same in every instance; but, laying these things aside, the nature of the farmer's affairs or business is such, that the best arranged system cannot be followed out, or carried into execution with the like precision or uniformity, as is perfectly practicable with a business carried on within doors. Hence in the first case, when the mainspring or impelling power is partially impeded, the motion of the small wheels is likewise irregular and disordered. To speak in plainer language, the propriety and expediency of every field operation depending upon the weather, mischief, instead of benefit, is often committed by the most active exertions, when not tempered by judgment. Not many led farms, as they are called, are therefore managed judiciously, except when committed to the charge of a servant qualified for being entrusted with discretionary management; and where such guide, the master's presence is of less importance. The same remark applies to farms possessed by widows, especially if they interfere in the executive department. Unless a very steady and clear-headed overseer is procured, it would, in nine cases out of ten, be more for the interest of those concerned, even for the landlord, that such farms were instantly subset, than to remain under the feeble management and imperfect husbandry generally exercised.

Dec. 30.—Mr Jamieson is now quite well, and has resumed his superintendance as formerly. I can assure you, that the resumption

sumption affords every one of us much happiness, on more accounts than one, because, during his confinement, we felt an anxiety not to be coveted. We have got thanks from him for our attentive management, as he was pleased to characterize it; and, what some people would consider as of more value, a guinea a piece to buy a new hat, as a compensation for extra trouble. I have intimated to him your desire that I should return home at Candlemas, which he kindly acquiesced in; and am vain enough to think myself now qualified, either to give you material help, or to take charge of a farm, should such be procured on my own account.

The land intended for turnips and beans, next season, is now all ploughed over, and Elliot is proceeding with what is meant for summer fallow; though, in my sight, this field does not stand greatly in need of that operation. It is better, however, to *keep* clean than *make* clean; therefore, as the field has run its course, a summer dressing must be highly beneficial. Mr Jamieson has repeatedly said to me, that in no way whatever can the same benefit be received from manure, as when applied to a summer fallow, because the pores of the earth are then open, and duly prepared for receiving a supply of nourishment; whereas, when laid upon grass or unploughed land, and turned in with a whole furrow, the ground is only partially impregnated by the manure. I think this accords with reason,—therefore felt surprise when I learned, that there is a set of agriculturists who decry summer fallow, as an unnecessary and useless practice.

We have got about two hundred cart loads of turnips home to the stack-yard, where they are built in a long stack, with an arched roof, and well covered in, for resisting the weather. The tops and tails were all cut away, and given to the wintering stock. I suppose the turnips thus brought home may answer for twenty days food; therefore, as snow storms are rarely of longer duration, little inconvenience can be sustained from hard weather. Besides, we have a large houseful of yam potatoes, which will make up for any after deficiency.

I mentioned before, that the bean straw is tied in bunches by a part of my squad, and lately had the curiosity to ascertain what quantity of ground was required to furnish straw, for one day, to the working stock; and the quantity of grain yielded from the straw of one day's consumption. I first inquired at Fairbairn, about the number of acres on which the contents of each stack were raised; and finding, on an average, that the bean stacks contained the produce of seven acres each, I kept an exact account of the bunches of straw; and the result was, that six hundred bunches, of one stone and a half, of 22 lib. avoirdupois each, were

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in the stack. Now, as I learned afterwards that the quantity of grain amounted to 63 bolls, of 4 bushels each, which was at the rate of nine bolls, or thirty six bushels per acre, and as the working stock (36 plough horses, and 4 old ones for driving turnips,) require 60 bunches per day, it appears, that a stack will suffice exactly for ten days consumption; that straw is used each day, which carried six bolls, one firlot, and three forpets of grain; that each bunch of straw yielded something less than one peck and three forpets; and that the extent of ground which produced the straw for one day's consumption, was seventy hundredth parts of an acre, Scotch measure. I have detailed these particulars, being sensible, that every thing favouring method and accuracy, is highly acceptable to you.

The machine thrashes the beans most completely;—indeed, not one pod is left unstripped of its contents: but in some cases it *hashes*, of course wastes, the straw considerably. Mr Jamieson says, that the saving from machines is much greater with wheat and beans, than with oats and barley,—the first mentioned grains being rarely clean thrashed before machines were introduced. The reason he assigns is, that unless sharp skutchers are constantly used, oats are seldom completely thrashed; and that barley, by reason of the long aun which adheres to it, is with difficulty prevented from going off amongst the straw. Indeed, he one day assured me, that a machine, to be perfect, should be provided with two sets of skutchers; one for oats,—and the other, more round, for wheat, barley, and beans. He added, that sharp skutchers do not suit wheat, as they cut the stalk over by the neck, and so occasion much of the grain to remain amongst the offal.

Jan. 16.—After two or three days frost, a heavy fall of snow came on last week, which, for a time, has effectually stopped field operations. All Elliot's people, and some of mine, are therefore employed in removing dung from the straw-yard, which is middened on the field intended for turnips; and, with every coat of dung, or, more properly speaking, unrotted straw, another of snow follows, which in my humble opinion, will have a powerful effect in hastening putrefaction; because, independent of all chymical reasoning on the subject, the snow will only melt in a gradual manner, thereby moistening the dunghill much more effectually than if the greatest quantity of water had been thrown upon it. Mr Jamieson declares, that he never saw a bad hill of dung, when mixed up with a full quantity of snow; and that this incorporation ought not to be neglected, when the means are gratuitously provided by the elements. I omitted to mention, that the turnip dung is also laid in layers upon the dunghill, and

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that the whole is carefully shaked and spread thereupon. We have already got out a large quantity, and, should the storm continue, the yards will be cleared. However, as there is an immense pile of straw in the centre yard, from which the places bared of dung are constantly covered, there will, in a little time, be as much accumulated as ever. About one third of the stack-yard is emptied; and, should the storm continue after the farm-yards are cleared, Mr Jamieson says he means to thrash incessantly till good weather returns.

My squad have partly been employed, for two months past, in cutting hedges, and some of them are remarkably dexterous at that operation. Mr Jamieson has all his hedges broad at bottom, and narrow at top; and in this way a fence is obtained, infinitely superior to the best stone walls. A very few years care, at the beginning, puts them into a situation for this mode of training; and, if that care is continued till they arrive at maturity, the after expense is perfectly trifling. Many farmers, good in other respects, are careless and indifferent about their fences, and neglect to protect and train up what was originally planted at a considerable charge. Without entering upon the general question, viz. the necessity of fences in every case, all I would say, is, that where they have been reared, a suitable attention ought to be be bestowed upon them afterwards. Where a hedge is planted, it must be taken for granted that it was deemed necessary; therefore, neglecting it afterwards must be considered as unpardonable conduct.

The ewes have got turnips since the storm commenced, a part of the field being railed off, to which they are taken through the day, but at night they are removed to an adjoining park, purposely hained and kept rough for such an emergency. Here, by scraping, they contrive to get a tasting of food; and as they have a bellyful of turnips every twenty-four hours, their situation is tolerably good. One day we had to shovel the snow from the turnips, before the poor animals could get at them.—Only three out of twenty score, have died since they came to the farm, in October last. Mr Jamieson says, he has often suffered at the rate of five *per cent.* through the season.

Jan. 30.—I am now preparing to depart from a place where I have enjoyed much happiness, and seen a great deal of business; having little more to do, but to get the inventory of implements taken off my hand, and the several accounts due to the men under my charge examined and audited. These things, I confess, are absolutely necessary;—still they do not afford me satisfaction, because they remind me, that I am to leave the service of a gentleman who has uniformly behaved to me like a father, and that

I am no more to associate with fellow servants, from whom I received uncommon instances of friendship and favour. Duty to you, however, is a permanent principle in my breast; and, though feelings cannot be overcome all at once, yet still those, which impress me at the moment, will not, I hope, in the slightest degree prevent me from enjoying the like happiness at your fireside, as I have experienced in this hospitable mansion.

The day before yesterday Mr Jamieson sent for me from the field, and I waited upon him immediately. 'George,' says he, 'I am more at leisure just now than I probably may be at your departure; therefore cannot employ myself better than in giving you a few advices, which, likely, may be useful when you settle in the world, or in your passage through it afterwards. In the *first* place, let me assure you, that I am well pleased with your behaviour when in my service, because it has been steady, regular, and inoffensive; but on these points I mean to write my good old friend, your father, which will be more satisfactory to him than any thing communicated through your medium. In the *second* place, I recommend most earnestly, that you would take particular care of your conduct and behaviour when entering into active life, because I have known many young men get a character stamped upon them at that time, which no future alteration of conduct was capable of removing. Be consistent and steady therefore in your actions,—cautious in forming schemes and connexions,—but firm and determined in the execution. Think for yourself at all times; and, though it is often wise and prudent to refrain from communicating our thoughts to others, yet, at no time, act contrary to the dictates of your own mind, or resign self-government in favour of another, whose interest, and whose views, may have a contrary direction. A man who is sober, attentive, and of any strength of mind, will rarely go far wrong; at least, if he does, he will soon be recalled to duty, by the influence of conscience, that vicegerent of the deity; whereas the person, who is irregular in his conduct, and without principles to govern his mind, may be compared to a ship in a boisterous sea, unprovided with a helm: He is tossed to and fro for a few passing years, and finally wrecked upon the shoals of misery and ruin.

'In the *third* place, as a large share of every master's happiness, even of his professional character, depends upon the integrity and faithfulness of those below him, I cannot sufficiently recommend to your notice what may be called the economy of managing servants; because, by studying this art successfully, your own interest may not only be promoted, but also the welfare and comfort of the labourers in your service materially increased. Servants with all their imperfections, (and God knows no human being

being is altogether perfect) are rarely so bad as represented; and in many instances their defective conduct may be imputed, in some measure, to the master himself, in so far as he neglects to teach them their duty, or behaves to them with roughness or asperity. When you, George, become a master, treat your servants with kindness; and I venture to say, that, almost in every instance, a suitable return will be experienced. The best servant may fall into error at a time; but when one of this character happens to make an unintentional mistake, rather wink at the fault, than reprehend it in the manner too customary with many people. Depend upon it, more good may be done in this way, than by adopting a contrary conduct; that is, if the servant is gifted with the slightest portion of sense and discernment. The thoughtless and profligate, I would not retain on any consideration; for it is an old and a true saying, that one scabbed sheep is capable of infecting a whole flock.

'*Lastly*, I advise most strenuously, that regular and correct accounts be kept of your whole proceedings. This system of correctness I do not restrict to the mere articles of debtor and creditor,—a length to which every man goes who pays the slightest attention to the management of business; but extend it to disbursements of every kind,—to the produce and sales of your crop,—to the returns and profits of stock,—and to an yearly balance of your affairs. The pleasure and satisfaction arising from these expositions, independent of their manifest utility, will afford a full compensation for the trouble thereby given: and were I to add, that a daily journal of your transactions would also be advantageous, it would only be inculcating the utility of a practice constantly carried on at this place, since I entered upon farm management.

'Let me see you often here; and rest satisfied of receiving my best advice at all times. If disposed to write me, be assured that a speedy answer shall not be neglected. I wish you well, and trust the lessons received here, will be of advantage to you afterwards.'

The foregoing contains the substance of Mr Jamieson's advices to me, which I hope have made an impression upon my mind, never to be obliterated. My correspondence from Barnhill shall now cease, as I expect to be with you in eight or ten days from this date; and to detail, more particularly than practicable upon paper, the many proofs of friendship displayed by Mr Jamieson during the twelve months I have been under his protection.

I am, your dutiful Son, &c.

FOR THE FARMER'S MAGAZINE.

Observations on the Papers presented to the House of Commons, relating to the Experiments made for ascertaining the relative Quality of Malt made from Barley and from Scotch Bigg. Communicated by Dr SKENE KEITH.

INTRODUCTION.

THE Landed Proprietors of the County of Aberdeen, at their annual general meeting at Michaelmas last, requested the writer to give them his opinion on the subject of these experiments. In compliance with this request, he has examined the printed Report with particular attention, and drawn up the following papers.

1. Short account of the principal errors or defects in the late experiments on the different kinds of malt. * This short paper is meant for such persons as, from various causes, cannot enter upon a tedious discussion, and has been privately handed about among the author's friends.

2. Observations on the papers presented to the House of Commons, in 1806, respecting the experiments conducted at Edinburgh by Drs Hope, Coventry, and Thomson. These Observations were read at a General Meeting of the County of Aberdeen, called for the purpose of receiving them on the 23d of June 1807. As they are addressed to the County, they are drawn up in the first person. The writer considers himself alone as responsible both for the arguments used, and for the accuracy of the calculations.

He has also drawn up a particular examination of the Report, which will be published, or not, as circumstances may render necessary. It has been seen by Drs Hope, Coventry, and Thomson.

He here begs leave to observe, that, in pointing out what appeared to him to be errors, and sometimes errors of considerable magnitude, he does not in the least mean to detract from the character of any of those learned gentlemen, on whose experiments he remarks with freedom. He considers them all as men of science, and gentlemen of strict honour and integrity. In holding different interviews with Drs Coventry and Thomson, he met with every degree of candour; and he felt it his duty to submit to these gentlemen the two papers which are now published, and to avail himself of their corrections or explanations where the printed Report was not sufficiently explicit.

OBSERV-

* This account was inserted in Far. Mag. No. 31. p. 360.

OBSERVATIONS, &c.

THE subject of these papers may be divided into the following branches.

I. The Order of the Lords of the Treasury for making these Experiments.

II. The Letter from the Commissioners of Excise in Scotland to the Lords of the Treasury, accompanying the Report of the Experiments, dated May 17. 1806.

III. An account of the different specimens of Raw Grain submitted to Examination.

IV. The Report of the Malting and Brewing Processes, by Dr Thomson.

V. The Report of the Distillation both of Malt and Raw Grain, by Drs Hope and Coventry.

VI. The Conclusion drawn by Dr Thomson from the Distillery Experiments.

VII. and *Lastly*, Dr Hope's Letter to the Commissioners of Excise, respecting his and Dr Coventry's reasons for stating, that the Malt made from Barley was only 8 *per cent.*, while Dr Thomson makes it 14 *per cent.* better than the malt from Scotch Bigg.

I shall consider these different branches in the order in which I have mentioned them.

I. As to the Order from the Lords of the Treasury to the Commissioners of Excise for Scotland.

Their Lordships order that the Board of Excise 'should direct a series of experiments to be made by the most competent persons that could be selected, for the purpose of inquiring into the correctness of the statements and calculations which were transmitted to them; and also that the Commissioners should report their own opinion, as to the precise proportion in which the quality of malt made of bigg is inferior to malt made from barley.'

I believe I need not remark, that the statements and calculations here alluded to, regarded *my evidence*, which was given before the Barley and Malt Committee of the House of Commons in 1804. But I must observe, that both their Lordships' Order, and that evidence, regarded only *the comparative value of malt* made of barley and Scotch bigg; and that all the experiments in distillation from *raw grain*, contained in the Report, were *unauthorized* by the Lords of the Treasury, and totally *unconnected* with my evidence before the Committee, as well as *foreign* to the question in dispute.

I shall only further remark, that as Drs Coventry and Hope differed in opinion from Dr Thomson, with respect to the proportion of inferiority of malt made from bigg, and as the Com-

missioners were ordered to report their own opinion as to the precise proportion of this inferiority, they ought, in their letter to the Treasury, to have taken notice of the different opinions of the learned Gentlemen, if they could not report their own opinion on the subject. This leads me to consider,

II. The Letter from the Commissioners of Excise to the Lords of the Treasury.

Here I would observe, that the conduct of the Commissioners was highly praiseworthy in selecting Drs Hope, Coventry, and Thomson, for superintending and conducting these experiments; and also for authorizing them to be conducted on a large scale, and in different premises, in which all the kinds of grain were to be subjected to similar processes.

But I cannot approve of their sending Mr Grant, general surveyor of Excise, to London to purchase English barley from the corn factors of that city, who were to be responsible for the quality of the grain which they sold, that it should be of the kind by which it was denominated, either 1st, 2d, or 3d qualities. Nor can I approve of similar instructions which were given to Mr John Anderson, examiner of Excise, for purchasing barley from the barley-raising counties of Scotland. Still less can I approve of sending a general supervisor, or supervisor of Excise, and a South-country farmer, to purchase bigg, only in the straw, from the farmers in the Northern and Highland districts of Scotland. A man of science ought to have examined all the specimens before they were purchased. And as Dr Coventry, the Professor of Agriculture, who is eminent in every branch of his profession, was one of the gentlemen who conducted the experiments, the selection of the samples ought to have been committed to him, or to some other man of science, in the event of his declining to accept the charge. An officer of the Excise ought also to have attended, for purchasing and identifying the specimens approved; and all the kinds of grain should have been purchased in the same manner. If this had been done, the different qualities of the grain would have been better discriminated than they are in this Report.

Owing to what I consider as improper instructions given by the Board, or to the incorrect way in which they were executed, there is too little difference between the best and the worst qualities of grain. And, what is yet more censurable, the heaviest barley in England, nearly 52 lib. per bushel, is called barley of the 3d quality; and the weightiest barley of Scotland, which was heavier than any English barley in the table of raw grain, is put in the list of 2d qualities. Had any previous examination been made by a man of science, such gross errors could not have happened.

pened. I must add, that, owing to the same causes, *very little bigg* of inferior quality *was purchased;* and *some of this was rejected*, though *bought only as 3d quality*, and perfectly fresh, though light grain. It is really unpleasant to dwell on this subject; but as the results of the experiments depended so much upon the proper selection of the specimens, it was impossible for me, and indeed, I think, it would have been dishonest, to pass over what I must consider as improper instructions of the Board of Excise, notwithstanding the very high respect which I entertain for the Commissioners.

III. As to the account of the different kinds of Raw Grain submitted to Experiment.

I would here call your particular attention to a matter of the utmost importance, viz. the very uncommon season of 1804. In that year, English barley, from having experienced bad weather, both while the ear was filling, and while it stood in the field after being cut down, was considerably below its average value in point of quality. On the other hand, the Scotch grain, whether barley or bigg, was much finer than what it is on an average of years; * barley being at least 10, and bigg more than 15 *per cent.* above its usual quality. Nay, those districts in which bigg is generally worst, owing to the favourable weather during the flowering, the filling, and the harvest seasons, had really the best grain; while those in which the quality of bigg is generally superior, in some cases suffered a little from the great drought, and had, in general, neither so great returns, nor so fine a quality of grain, as was raised in the other districts. Therefore, although the barley and bigg used in these experiments had been fair specimens of the produce of that year, and although they had been properly arranged into classes of 1st, 2d, and 3d quality; also although the malting, brewing, and distilling processes had been conducted in the most unexceptionable manner, the results of these experiments could not have been applicable to that of the produce of barley and bigg *in ordinary seasons.* By the Corn Act, barley of a middling quality weighs 49 lib. per bushel; and bigg of the same quality weighs only 42 lib. per bushel. I believe that, on an average of seasons, this is nearly the true weight of barley and bigg; and that Scotch barley, in general, is about 2 lib. per bushel less weighty than English barley; and that Scotch bigg is at least 4, if not 5 lib. less than Scotch barley. As the experiments, which were conducted in Edinburgh, were intended to verify or correct those which I made in 1803, I must remark, that the specimens which I employed were three of Scotch bigg malt, one where the grain weighed only 36 lib.,

* These circumstances were noticed at the time in the F. Mag.—*Conductor.*

another where it was 42 lib., both raised on my own glebe (parsonage lands), and a third where it was 46 lib. per bushel, the weightiest which I could procure of crop 1802. The only specimen of Scotch barley which I used weighed 48 lib.; and the two specimens of English barley weighed 51 lib. per bushel. But the average weight of the English barley, used in the experiments made at Edinburgh, of crop 1804, was about 49 lib. and 3 quarters of a pound per bushel, or, by the Brewing Tables, exactly 49.778 lib. This was a pound and a quarter per bushel inferior to my specimen of English barley. The average weight of Scotch barley, from a medium of nineteen kinds, was 50.067 lib., or two pounds and an ounce per bushel more than the Scotch barley used by me; and the average weight of seventeen kinds of bigg used at Edinburgh was 47.601. This was above 6 lib. and a quarter per bushel weightier than the average of the three specimens of grain used by me; so that there is no reason for supposing that the results of crop 1804 do in the least degree affect the credit of my experiments, which were made on the inferior grain of 1802. I have reason to believe, that Drs Hope, Coventry, and Thomson, will all admit, that the specimens used by them were not a fair average of the quality of the different kinds of grain in ordinary years.

But, unfortunately, owing to the instructions given by the Board of Excise for the purchasing of the specimens,—to the interpretation put upon these instructions,—to the mode of executing them, or to the improper arrangement of the different parcels of grain into classes of 1st, 2d, and 3d qualities, and then taking the medium of these three for a general average of each kind of grain, a number of errors have been committed, and very ill founded conclusions have been drawn. In the purchase of barley from four different counties in England, (or at least at Mark-Lane, under the designation, of belonging to four counties) *the best* English was considerably *more than a pound lighter* than the *best Scotch* barley; and the *worst* specimen of *English barley* was more than a *pound lighter* than the *average* of the specimens of *Scotch bigg*. The best Essex barley was only 48.4 lib. per pushel, and the worst 46.4 lib.; although, if a proper price had been offered to the farmers in Essex, barley of 53 pounds could have been procured in that county. Almost all the barley of 2d quality turned out worse than that of the 3d quality. Very little bigg of an inferior quality was purchased; nay, as already mentioned, some inferior bigg, although purchased as 3d quality, was rejected. It is well known to the county of Aberdeen, that when they offered to send to the commissioners of Excise three quantities of bigg, of crop 1802, and of the three different kinds used by me in my experiments, viz. of 36, 42, and 46 lib. per bushel, the offer of

this

this reſpectable county was *rejected* by the Board. It ſhould alſo be known, that the gentlemen whom they ſent to purchaſe the different ſpecimens of bigg, were *prohibited* from purchaſing any grain, except of crop 1804.

Further, the grain, when purchaſed, was not arranged into claſſes in any proper manner. I ſhall only notice a few of the errors in the raw grain tables of the Report.

1ſt Norfolk, 50.375 lib.; 2d Norfolk, 50.570 lib.; and 3d Norfolk, 51.937 lib. per buſhel. It is obvious that theſe numbers ought to have been inverted. The 1ſt ſhould be 3d, and the 3d ſhould have been called 1ſt quality. In like manner, 1ſt Kent weighs 49.877, and 2d Kent weighs 50.062: it therefore ought to have been reckoned firſt quality, and the other only ſecond.

In the ſame way, the weightieſt Scotch barley in the whole tables of raw grain, of 52.265 lib., is moſt improperly termed 2d quality. And Angus grain, of 49.312, is called 1ſt quality. Fife barley, of 48.703, is called 2d quality; and Fife barley, of 49.754, is moſt improperly called 3d quality.

Laſtly, Ayr bigg, of 47.953 lib., is called 2d quality; and Dumfries, of 47.5, called 1ſt quality. Many other errors might be mentioned.

Nothing can be more clear than that the different parcels of each kind of grain ſhould have been arranged in the tables of raw grain according to their weight per buſhel; and that they ſhould have been divided into 1ſt, 2d, and 3d qualities, either according as they were above, at, or below, the weights of middling barley and bigg, by the corn acts; or according to the ſeaſon of 1804: In which laſt caſe, one third of the number of parcels which were heavieſt, ſhould have been called 1ſt quality of each kind of grain; another third of the number of parcels of each kind next in point of weight to the former, ſhould have been called grain of 2d quality; and the remaining third, as being the lighteſt in point of weight per buſhel, ſhould have been called the 3d quality of grain. But the conductors of theſe experiments have paid no regard either to the weights of grain in the corn acts, or to that of the grain which they uſed of crop 1804.

I have been credibly informed, that the different kinds of grain, when purchaſed by the perſons employed by the Exciſe, were marked 1ſt, 2d, and 3d qualities, *according to the prices* paid for them, and *without regard to any other circumſtance*, except the prices. This was extremely inaccurate.

It was the more neceſſary to arrange the whole parcels of grain, and diſtribute them into claſſes, that this had not been attended to when they were at firſt purchaſed; and a particular account of every parcel ought to have been given in the Report. But we

have no account of the diſpoſal of the whole quantity of grain. Conſiderable quantities of malt are mentioned as uſed, of the malting of which there is no previous account; and the Report informs us, on the other hand, of ſeveral parcels of grain which were malted; but we know not what became of the malt. I have gone over the whole Report with great care; and only find accounts of the diſpoſal of about three fifths of the total quantity of grain. No doubt, the whole was uſed in theſe experiments; yet a general ſtatement of its diſpoſal ought to have been given in the Report: And we ſhould have had more confidence in the ſucceſsful experiments, if the unſucceſsful ones had been conciſely ſtated, though they had not been particularly detailed.

IV. As to the Malting proceſs, which falls next to be conſidered, ſeveral obſervations occur, which merit particular attention.

1. When the raw grain was put into the ſteep or ciſtern, the light corns which ſwimmed on the ſurface of the water were ſkimmed off; and all the ſubſequent calculations in the malting tables are computed, not from the quantity of raw grain thrown into the ſteep, but from the quantity of ſkimmed grain, which is called *the grain really ſteeped*. As the Scotch grain of crop 1804 was of ſo excellent a quality, it appears to me, that the ſkimming off the light corn was unneceſſary; and that the whole ſhould have been malted. But as the computations were made from the quantity of ſkimmed grain, the original weight per buſhel ſhould not have been retained; but the true weight of a buſhel of ſkimmed grain ſhould have been marked in a column immediately after the name of the particular parcel in the ſubſequent part of the Report. Owing to the neglect of this, Scotch bigg is ſuppoſed to produce about 1 per cent. of more malt than it actually did, compared to Engliſh or Scotch barley; and the quantity of malt from a pound of raw grain, and alſo the quantity of extract in the brewing tables from a pound of raw grain, are calculated from falſe data.

2. The Report, by the mode employed of computing averages, makes it appear that Scotch barley had the heavieſt ſwimmings. If the only correct mode of calculating theſe had been adopted, viz. dividing the whole weight of each kind of grain by the number of buſhels of that kind, it will be found that the ſwimmings of Scotch bigg, ſtated at 25.7 lib. per buſhel, were really 29.04 lib. per buſhel. Alſo, thoſe of Scotch barley, ſtated in the Report at 27.7 lib. per buſhel, were only 26.8; while the ſwimmings from Engliſh barley are 25.7 lib. per buſhel, as they are ſtated in the Report.

From this, it appears clearly, that Scotch bigg had been dreſſed to a higher pitch than either kind of barley; and as *its ſwimmings* were *nearly three pounds per buſhel weightier* than the ſwimmings

of

of the two kinds of barley, (computed from the average of the whole), while the *raw grain* of the bigg was *two and a fourth lib.* lighter, it is not improbable that the bigg had been more ſeverely ſtirred in the ciſtern, and its ſkimmings or light corn taken off more eagerly by the inferior operators, than the raw grain of the barley was either ſtirred or ſkimmed by them. I mention this laſt circumſtance for two reaſons: 1*ſt*, Becauſe I am ſatisfied that the learned gentlemen who ſuperintended theſe experiments had no concern in ſuch improper conduct, if it was practiſed: 2*d*, Becauſe, in ſimilar proceſſes, viz. paſſing the raw grain through the fanners, either *inferior* barley was uſed, or, by ſome *unaccountable* conduct of the inferior operators, both Scotch and Engliſh barley became *lighter*, and Scotch bigg became *conſiderably heavier*, after undergoing the operation of the fanners.

The next thing deſerving of notice, is the inequality of time, both in ſteeping and in malting the grain. It appears to have been ſteeped, at all periods, from 44 to 119 hours. This was by no means ſubjecting all the kinds of grain to ſimilar proceſſes. If experiments were to be made on the effect of ſteeping malt, a quantity of each kind of grain ought to have been divided into three equal parcels; one for being ſteeped a ſhort, another for being ſteeped a moderate, and a third for being ſteeped a long time; and ſuch experiments, and their results, ought to have been kept quite ſeparate from the other maltings, and not allowed to be mixed with them, in calculating general averages. It is worthy of remark, that the beſt barleys, both of England and Scotland, which were ſteeped very long, neither made ſo much malt, nor yielded ſo much extract, as inferior grain that was only a moderate time in the ciſtern; which I conſider as a proof of the bad effects of ſteeping too long. Dr Coventry, I am informed, differs from me in regard to the time of ſteeping malt. But we cannot differ on this point,—that what was ſteeped 119 hours, ought not to have been claſſed with what was ſteeped only 44 hours. Whatever experiments were made, with reſpect to the proper time of ſteeping, to the number of days on the floor, to the different degrees of length to which the plumula, or acroſpire, ſhould be permitted to extend, or to any variations in the malting process, thoſe ſhould have been arranged into diſtinct claſſes, and the results only of each particular claſs ſhould have been compared together. But I find, in the report, not only various periods of ſteeping the grain intended for malting, but that the malt, in ſome caſes, was only eight, and in others 20 days, on the floor. Surely theſe maltings ought to have been arranged into different claſſes, and not confounded together, by taking the average from trials which were ſo very differently conducted.

But

But the greatest inaccuracy, in this branch of the experiments, consists in the very unequal degree of increase in the process of malting. I find Kent barley, weighing 49.75 lib. per bushel, *increases* above 11 *per cent.*; while Fife barley, of 49.744, or very nearly the same weight per bushel, is *made to decrease* from 100 to 91.52. The difference of result, in the malting process, between these two kinds, is above $21\frac{1}{4}$ *per cent.* (a thing impossible, if the malster had done equal justice to both). I also find, that of two of the weakest biggs in the whole malting tables, one, viz. the 3d Kirkcudbright, which was the weightiest, *decreased* $5\frac{1}{4}$ bushels in the 100; while 3d Aberdeen bigg, though lighter than the other, is *made to increase 5 per cent.*: this is a difference of $11\frac{1}{2}$ *per cent.* in weak bigg. A multitude of other irregularities occur in the increase of bulk in the malting process.

I would further remark on this subject, that in the kiln-drying of the malt, there appears to have been a *very great difference* in the temperature of the kiln, or in the degree to which the different kinds of malt had been dried. I find that the bushel of 1st Suffolk, which weighed 40.56 lib. per bushel, had been dried in a *moderate* temperature; for it weighed only 41.75 lib., after it had lain several months, and was ground for distillation, or 1.19 lib. more than when taken from the kiln. But I find that the 1st Aberdeen bigg malt had been dried in a very high temperature, for it weighed exactly 39 lib. per bushel from the kiln; but when it had lain several months, and was also ground for distillation, it weighed 41.83125, or nearly $2\frac{1}{8}$, exactly 2.83125 lib. (above $7\frac{1}{2}$ *per cent.*) more than when newly dried. As the English malt, from better grain, had a smaller proportion of hull, and was weightiest when kiln-dried by nearly $1\frac{1}{2}$ lib. per bushel, it should have become still weightier, in proportion, than the bigg malt: yet the latter increased, by lying some months, above $7\frac{1}{4}$ *per cent.*, while the former increased only $2\frac{9}{16}$ *per cent.*, or $3\frac{1}{3}$ *per cent.* less than the lighter malt from bigg. This is extremely irregular; and yet these two kinds were used in the distillation of pure malt, without noticing the difference of kiln-drying, which was at least $3\frac{1}{3}$ *per cent.*, or occasioned $3\frac{1}{3}$ *per cent.* of more malt from bigg to go to a bushel.

Lastly, on this subject. If we look at the proportion of weight of malt to that of raw grain, we find that the weakest bigg, in the whole malting tables, of only 44.086 lib. per bushel, produced .782 of a pound, or above $12\frac{1}{2}$ ounces of malt; while the weightiest barley in the whole tables, of 55.093 lib. produced .746 of malt, or 11 ounces 15 drams to the pound of raw grain. And the barley, which was next in point of weight, viz. 52.265 lib. per bushel, produced only .733 of a pound, or nearly $11\frac{1}{2}$ ounces

of

of malt from the pound of grain. These results are impossible, if justice had been done to both in the malting process, and if both had been equally dry when taken off the kiln.

On the whole, nothing more irregular can be conceived than every branch of that process, from the steep or cistern, to the kiln-drying of the malt.

The Brewing process next demands our attention.

Here it is proper to remark, that there are a number of errors of calculation in the Brewing Tables. The very first quantity brewed, viz. 1st Norfolk, is said to yield, from every pound of its grain, .4485 of a pound of malt. According to the method of calculating adopted by the Report, it ought to have been .4954. This is a difference of .0465; or an error of above 10 *per cent.* in the first result. The 1st Haddington and Berwick is marked .4915, when, from correct calculation, from the data adopted in the Report, it ought to have been only .4657. Another parcel of the same is marked .4919, when it ought to have been .4659.—These are great errors, in a most important part of the tables.

Indeed, the whole of the last column, though a very useful one, is calculated upon a wrong principle. All the *malting tables* are computed from the weight of skimmed grain, *after the swimmings were taken off.* But the calculator forgets this in the *brewing tables;* and, in order to find the extract from a pound of grain, he divides the quantity of extract in a bushel by the weight of the raw grain, instead of the weight per bushel of the skimmed grain: so that he both calculates upon a wrong principle, and commits several errors, in computing from false data.

But by far the greatest error in these brewing tables, as it goes the length of destroying all faith in the general result or quantity of extract said to be obtained from each brewing, deserves the most particular attention.

Dr Thomson has given us a table of saccharine matter, in page 48th of the Report, in which he shows the quantity of that matter, indicated by every degree of specific gravity. The brewing tables also contain the quantity of dry extract contained in the worts of every brewing; and also, in several of the brewings, the specific gravities of the worts, their weight per barrel, by Dring and Fage's saccharometer (as it is called in the Report), and the number of barrels of each kind of wort. Now, if Dring and Fage's saccharometer were correct, and if the gravities indicated by this instrument, and also the specific gravities, had been accurately taken, we should have three different ways of finding the quantity of solid extract, and these three should agree pretty nearly: but this is by no means the case. Take a few examples

of

of what the quantity should be, compared to what it is stated in the report.—

1st Brewing of 1st Norfolk. By computation from the specific gravities of the worts, it should be, -	1314.33
In the Report it is stated to amount to - -	1364.89
A difference by far too great in an experiment of this nature, - - - -	50.56
15th Brewing, 1st Edinburgh. Extract by computation, from the specific gravity of worts, is -	1720.15
By the Report it is stated to be - - -	1490.80
The quantity of extract is therefore underrated by 15 *per cent.*, or - - - - -	229.35
19th Brewing, 1st Lanark. Computed from the specific gravity of the worts, is - - -	1537.63
In the Report it is stated at - - - -	1282.16
A difference of no less than 20 *per cent.*, or -	255.47
The same, computed from Dring and Fage's saccharometer degrees of density, is - - - -	1523.23
This is also more than is stated in the Report by 19 *per cent.*, or - - - - -	241.07

But in general, the quantity computed from the saccharometer degrees of Dring and Fage, is less than either that which is stated in the Report, or calculated from the specific gravity of the worts. Thus,—

The 4th brewing of 1st Norfolk, in the Report, states the extract to be - - - - -	1368.
Calculated from Dring and Fage, it is only - -	1174.89
A difference of about 16 *per cent.* - -	193.11
The 32d brewing is stated in the Report to contain, of dry extract, - - - - - -	1624.10
By computation from D. and F.'s instrument, it is only	1406.16
Difference no less than 15 *per cent.*, or -	217.94

The

The 48th brewing, Essex, is, by the Report,	-	1540.30
By calculation from D. and F.'s instrument,	-	1259.24
Difference still greater, about 22 *per cent.*,	-	281.06

It is farther to be noticed, that of 53 brewings (all that are recorded in the Brewing Tables), the specific gravity is only taken of 26; so that, in fact, we have no data for computing the quantity of extract in 27 brewings, or for checking the results in the Table, by computations from the specific gravity; and it may be remarked, that the specific gravity of worts, from *bigg malt of the 3d quality, has not been taken at all.* The saccharometer degree, according to Dring and Fage's instrument, is taken in all the worts of only 39 brewings. And of the whole 53, only 17 brewings have both the specific gravity, and the weight of all their different worts, by Dring and Fage's saccharometer, marked in the Report. Therefore, we have correct data for ascertaining and checking, in different ways, the quantity of extract in these 17 brewings only.

It would be uncandid not to mention, that I have every reason to believe that Dr Thomson, who drew up these tables, is not in the least to blame for not marking, in every case, the specific gravity of the different worts. The brewings were carried on in three distinct breweries; and Dr Thomson could draw up his Tables only from what materials he received. I understand that most of the brewings from Scotch bigg were conducted in the same brewery; and that the greatest deficiency, in marking specific gravities, was in this brewery. The marking, either this or the weight of the worts, by Dring and Fage's instrument, ought not to have been left to any brewer or inferior operator. I wish, however, to be understood as not blaming any person, but merely to state (what I believe is the fact), that Dr Thomson is not to be blamed for neglecting to record what he did not receive.

I must desire particular attention to another important circumstance.—What is called, in the Report, Dring and Fage's saccharometer, is, in fact, Mr Clark's hydrometer for worts. I do not mean to quibble about the name of this instrument; but merely to state, that in 1745 Mr Clark invented it, many years after his hydrometer for spirits was introduced; and that his brother-in-law, Mr John Dring, afterwards improved this instrument in 1779, as appears from a small pamphlet of Mr. Dring's, printed in that year, and now on my table. This instrument, even when improved, was not contrived to indicate a certain number of pounds per barrel, of dry extract, or of what has been improperly

improperly called saccharine matter; but was made, according to an arbitrary scale of Mr Clark's, for distinguishing, as well as he then could, the different strengths of wort. It was not till 1785, that the ingenious Mr Richardson of Hull introduced the term saccharometer, after weighing an half barrel filled with water, and then contriving an instrument that should indicate the number of additional pounds per barrel, which any wort weighed more than the weight of water; and which additional weight he, not very correctly, termed *Saccharine matter.* As Dring and Fage's instrument was made on a different principle, and indeed upon a somewhat arbitrary scale, the method adopted in the Report, of multiplying the number of pounds according to that instrument by 2.55, to ascertain the number of pounds of solid extract, could only be correct in a single instance; and therefore, all the computations of extract founded upon that proportion or relation to a pound of D. and F.'s instrument, are made from false data. I find, that of 27 brewings, where the gravity is marked according to this instrument, it is in *three* cases *much overrated;* in a very few cases near the truth; and, in a great many cases, from 15 to 25 *per cent. below the quantity* of extract, as ascertained by the specific quantity of the worts. On the whole, therefore, it is obvious, that no regard can be paid to the quantity of extract stated as *the average* of the different kinds of malt in these Brewing Tables.

But still if there were no objection to the results, or to the different quantities of extract stated in the Report, the calculations founded upon them must be regarded as extremely inaccurate. For, owing to the very erroneous method of dividing each kind of grain or malt into 1st, 2d, and 3d qualities, and computing averages from *unequal numbers* of parcels, also *improperly arranged,* the comparative value of the malt made from bigg compared to malt from barley, is *much overrated;* and is, by Drs Hope and Coventry, estimated at only 7 *per cent.* less than that of barley; when, by computing from the average taken from the *whole* extract per bushel, of *all the parcels* of each kind of grain, it is above 10 *per cent.* inferior. —This is a great error of calculation in a national experiment.

Lastly, on the subject of Brewing.—As much more water was poured upon the bushel of bigg malt, than upon the malt of either Scotch or English barley, it deserves to be particularly attended to, that if the great quantity of water in brewing had been duly proportioned, barley would have been 20 *per cent.* superior to bigg.

Instead of proportioning the quantity of water used in brewing to the weight of the different kinds of malt, deducting that of the husk, the bushel of Scotch barley malt, which, at an aver-

age,

age, was 38.893 lib., contains only 14.59 gallons of worts. That of English barley, which at an average weighed 37.04 lib., contained 14.76 gallons of worts; while the bushel of Scotch bigg, which weighed only 36.492 lib. was so much diluted by water, that it contained 15.27 gallons.—This was an error of the greatest magnitude; for, taking into the account the difference of the weight per bushel, and the greater quantity of husk in bigg than in barley, the malt from Scotch barley ought to have had 16.74 gallons, and that of English barley 15.88 to the bushel. It is but fair to add, that I am informed there was no design in this disproportion of water poured on malt from bigg. It seems, most of the bigg malt was brewed in one brewery, where the brewer used much *more water* than was used in the other two breweries; and I am informed, also, that this water was *softer* than the water in the other two places: so that the Scotch bigg got both more water, and that water too a more powerful solvent, or searcher of the malt. I approve much of the experiments being made in different premises: but an equal quantity of each kind of malt should have been used in each brewing; and the conductors should have sometimes exchanged places, and always obliged the brewers to use duly proportioned quantities of water.

It would be invidious to point out all the impossible results which have been occasioned by taking incorrect gravities of the worts, or where the inferior operators, by using very unequal and disproportioned degrees of dilution, have misled the learned gentlemen who conducted these experiments. I shall select only *a few* out of a great number.

1st. 60 Bushels of the best Scotch barley, viz. Haddington and Berwick, of 53.093 lib. per bushel of raw, and 53.458 lib. of skimmed grain, (containing 2376 lib. of malt from barley,) produced, according to the Report, only 1475 lib. of dry extract. Also 60 bushels of the next best Scotch barley, called 2d Haddington, (weightier than any English barley in the Tables,) produced, from 2237.88 lib. of malt, only 1319.84 lib. of extract; and another brewing of this malt produced still less, according to the Report: while, on the other hand, 67¼ bushels of bigg malt, weighing in whole only 2375.35 lib., produced 1481.78. At this rate, the Scotch bigg malt of the worst quality, and having a greater proportion of husk, produced more extract from the pound of its malt than the two kinds of malt from barley, of the best quality in Scotland; and much weightier than any of the English barley of 1804, which appears in this Report.

When we see, both that a greater weight of malt was made from the worst bigg than from the best barley, and, still more, when we see that a pound of this malt from bigg, of only 44 lib. per

per bushel, is made to produce *more dry extract* than a pound of malt from the *best barley* in Scotland, from 52.265 to 53.093 lib. per bushel, it is impossible to pay *the least regard* to such results, *when the quantity of dry extract is the only point under consideration.* If the causes of these impossible results be inquired into, we may ascribe them partly to unequal periods of steeping; to an ill conducted malting process; and to disproportionate degrees of dilution:—and we may also impute these gross errors to inaccurate measures of malt, or incorrect weights of the specific gravity, or to unequal degrees of mashing the grain. But whatever be the cause or causes, nothing can be more clear, than that, in any well conducted series of experiments, these results are impossible, or could not have existed.

If any thing were necessary to be added to this argument, it would be, that the comparative value of different malts can be ascertained only by distillation, as Dr Thomson candidly admits. The brewery, in the best conducted process, does not afford correct data for deciding this question: much less can these brewings afford such data.

V. It is therefore to the distillation of the different kinds of malt that we must have recourse, as the only correct rule for ascertaining their relative values.

Several important facts here demand our particular attention.

1st, The attempting to ascertain the relative quality of different malts, by distilling mixtures of malt and raw grain, is in every view censurable. It was going beyond the order of the Treasury;—it was not a fair nor a correct mode of ascertaining the relative qualities of the different kinds of malt. The unequal attenuations of wash from raw grain, compared with that from malt, prevent us from comparing two things which are of different natures, although the quantity of water had been duly proportioned in both cases; and though there had been nothing exceptionable in the mode of conducting these experiments.

2dly, The method of carrying on the process, or of executing this part of the experiments, is liable to many objections. The raw grain of barley, after being put through the fanners, was lighter, not only than the skimmed grain of the same denomination used in malting, but even lighter than the raw grain before it was put into the steep. And the raw grain of bigg was weightier than even the skimmed grain, after the swimmings in the malt-cistern were taken off; and considerably weightier than the raw grain of bigg used for malting, before it was put into the steep. I consider the raw grain of barley, used in distillation along with malt, as 4 *per cent.* worse; and the raw grain of bigg as 8 *per cent.* better than what was used in the brewery. The weights of the different kinds were these.—

Average

Average of English barley—Steeped 49.778. Skimmed 50.390. After fanners 49.722.
——— of Scotch barley—Steeped 50.067. Skimmed 50.484. After fanners 50.026.
——— of bigg — Steeped 47.601. Skimmed 48.149. After fanners 48.401.

It is impossible, that if the same quality of grain had been used in the steeping and distilling processes, and if any sort of justice had been done in passing the different grains through the fanners, that the barleys could have become lighter, and the bigg heavier, by the same operation. Therefore, there must have been a different quality of raw grain used in distilling.

It is here also deserving of attention, that two bushels of raw grain were used to one of malt, without regarding whether the malt had increased or decreased in the process of malting. Twenty bushels of malt were mixed with 40 of raw grain in every brewing. These 20 bushels sometimes contained less than 18 of raw grain, and sometimes they contained above 21. By this means the quantity used varies with every experiment; and no well founded conclusion can be drawn from any of those trials.

It ought likewise to be particularly noticed, that in fifty brewings of raw grain and malt for distillation, the grist or mixture of malt and raw grain got about one seventh less water than the same measure of malt, though, as it was weightier, it ought to have got considerably more than the other; and that the Scotch barley, in only one single instance out of fifty brewings, got a fair proportion of water poured upon it, while in every other case, Scotch bigg got considerably more than its proportion of water, and, of course, was both better searched in brewing, and better attenuated in the fermentation.

If any thing were wanting to complete the absurdity of this mode of proceeding, it would be the making false calculations from the experiments. To save a little trouble in calculating the results, the reporters take the *general proportion* of malt to raw grain in *all* the *different kinds* and *qualities* used, instead of being at the pains of calculating from the *proportion of raw grain* in *every individual experiment*. This is extremely incorrect in a set of national experiments.

In distillation, much more water was used in these experiments than in the brewing process; and therefore, the quantity of extract should always have been greater; yet it is sometimes said to be much less. I have calculated the quantity of dry extract from the specific gravity of the worts, and find a number of impossible results, that is, of quantities of extract that either are misrepresented, owing to the brewer not taking the weight of his worts with any degree of accuracy, or occasioned by very imperfect mashing of barley, and by very severe mashing of

bigg, I shall here state only the general results, in a short table, of the number of pounds of solid extract in sixty bushels of malt; of raw grain and malt distilled; and, lastly, of pure malt distilled, as far as there are vouchers in the Report.

	ENGLISH BARLEY.	SCOTCH BARLEY.	SCOTCH BIGG.
Malt, 60 bushels brewed, 1st quality - - - -	1373.64	1510.26	1348.40
Do. do. 2d quality - - - -	1311.00	1371.24	1256.76
Do. do. 3d quality - - - -	1313.58	1264.56	1232.70
Raw grain distilled, 1st quality, in suites - - -	1462.89	1506.56	1486.93
Do. 2d quality - - - - - -	1285.50	1451.85	1383.50
Do. 3d quality - - - - - -	1401.14	1391.06	1305.11
Raw grain distilled in single brewings, 1st quality	1323.03	1291.06	1486.93
Do. 2d quality - - - - - - - - -	1026.88	1277.40	1383.50
Do. 3d quality - - - - - - - - -	1189.58	1224.52	1305.11
Distilled pure malt by the Report, 1st quality -	1631.	1422.024	1436.669
By calculation from gravity of worts, 1st quality -	1012.07	1291.722	1388.460
Distilled, 2d quality, per the Report - - - -	1460.434	1447.537	1385.385
Do. by calculation, from gravity of worts - -	1349.849	1303.063	1217.731
Distilled, 3d quality, per the Report - - - -	1359.155	1500.696	none left
Do. by calculation from gravity of worts - -	1138.53	1170.344	none left

It is evident that no dependence can be had on the quantity of extract in these experiments, as a few examples will show beyond all contradiction.

1. Malt, from English barley of the first quality, yields, in the brewery, from 60 bushels 1373.64 lib. But when distilled, the quantity of extract by the report is 1631; and if this extract be properly computed, it amounts only to 1012.07, or 60 per cent. less than in the Report. It is impossible to reconcile these discordant results, without setting aside the accounts of the specific gravity of the worts, as being taken very incorrectly, and unworthy of all credit.

2. English malt of the second quality, when brewed for ale, contained 1311 lib. of dry extract for every 60 bushels, at an average of all the brewings. But when the malt and raw grain of this denomination were distilled in suites, they produced only 1285.50 lib., though, if justice had been done, it should have yielded much more extract than in the brewery; and when still more diluted in single brewings for distillation, they produced only 1026.88 lib. In this last case, the grain must have been much weaker, and probably the mashing process worse conducted, or the brewer has paid no attention to taking the gravity of the worts; otherwise, this gravity has been much underrated. The malt of second quality of English grain was uniformly worse than that of the third quality.

3. In the brewings, 60 bushels of English malt of the third quality

quality yielded 1313.58 pounds of extract. In the distillation of raw grain in suites, they produced 1402.14. In the same kind of distillation, a single brewing produced 1189.58; in the distillation of pure malt, by calculating from the gravity, 1138.53; and in the Report, 1359.155. It is impossible to reconcile these contradictory accounts. But it is curious to observe, that the learned gentlemen differ in opinion, whether bigg be 8 or 14 per cent. inferior to barley of all kinds, when we find 60 per cent. of difference between the quantity of extract of the same kind of grain, viz. English barley of the first quality, and above 20 per cent. between this quantity in English grain of the third quality.

The same inaccuracy appears in the statement of the produce of Scotch barley and Scotch bigg; but I purposely chose to take the example from English barley; because there can be no suspicion of intentional error, while there is the clearest proof of the greatest want of care in taking the gravity of the worts.

It is impossible, therefore, in any view of the subject, to pay the least regard to the experiments in the distillation of raw grain, as affording *any data* for proving the comparative values of the different kinds of malt.

The distillation of pure malt, which should have been the principal object, employs only nine brewings, while it appears that ninety brewings were distilled in these experiments. And I do not see that any excuse can be given for consuming all the specimens of the weak bigg in the brewery, and raw grain distillations; or for employing so small a share of time on the distillation of pure malt, when it was the relative value of different malts, and not of different kinds of raw grain, that was to be ascertained. But several improper things were also done in the distillation of pure malt.

1. The malt of Scotch bigg, reserved for distillation, had been dried in so high a temperature, that the bushel, which weighed exactly 39 lib. as was formerly noticed, when taken off the kiln, weighed 41.83125 after being ground, or 2.8 lib. or 2 lib. 13½ oz. more, while the malt of the best English barley increased only 1 lib. 3 oz. after it was kiln-dried. There is something here which would seem to imply a deliberate intention in some of the operators of making the malt of Scotch bigg too productive. I am unwilling to insinuate deliberate bad intentions, even in regard to the inferior operators; but certainly there has been very great carelessness, or too great inequality in the degree of kiln-drying.

2. What is called second Scotch bigg, contained only two parts out of five of what, in the malting tables, is marked as bigg of the first quality. It was composed of different proportions

tions of malt from Aberdeen, Perth, Dumfries, Angus, and Kirkcudbright. Only the two latter kinds of malt are classed in the list of second qualities of grain. If all the malt of second quality had been used, that circumstance should have been honestly related, as is done with regard to bigg malt of the third quality; and in calculating the produce of the mixture, the greater value of the proportion of better malt should have been allowed. I am informed by Dr Thomson, that there were only 19 bushels of first quality to 41 of second quality; but there should not have been one bushel.

3. The Scotch barley malt of the first quality got by far too little water for searching its grains. It contained only 1201 gallons of wort, while the malt of Scotch bigg had 1364, or above 13½ per cent. more water. This is a very unfair proportion; and it may be just noticed, that if the distiller had run the wash from this barley, sufficiently low in the distilling process, it would have also produced a few gallons more of low wines.

If we now compare the produce, in proof spirits, of the different kinds of pure malt distilled, we must see that, from the irregularities in steeping, malting, and kiln-drying the malt, we can only calculate from the quantity of raw grain malted, *i. e.* from the malt produced from a quarter of each kind of grain.

	Gallons.
A quarter of first English grain malted, from the medium of two experiments, yielded, of proof spirits	21.945
A quarter of first Scotch barley, from imperfect dilution and attenuation, yielded only - - -	20.261
A quarter of first Scotch bigg, well diluted and attenuated, yielded - - - - -	17.788

At this rate, first Scotch bigg malt is nearly 22 per cent. worse than first English, and 14 per cent. worse than first Scotch barley. But if the Scotch barley of 1804 had been equally attenuated and diluted, it would that year have produced as much spirits as the English barley produced of proof spirits.

If we compare the barley of second qualities with the bigg called second quality, we must observe, that the bigg malt of this name weighed 39.168 lib. per bushel, near three pounds per bushel more than the average of bigg malt used in the brewery; and we must deduct for the mixture of first quality.

	Gallons.
English barley malted of the second quality produced, of proof spirits, per quarter - - -	20.785
Scotch barley, which was only about the weight of bigg - - - - - -	19.059
Scotch bigg malted, deducting the value of the mixture, and leaving only second quality, would be -	17.066

At

At this rate, the English malt of the second quality is nearly 22 per cent. better than bigg malt of that quality, and Scotch barley malt is nearly 12 per cent. superior to second malt from bigg. It also deserves to be noticed, that what was called English barley of second quality, was really inferior to the Essex or third quality, and also that Scotch barley malt used in distillation along with raw grain, was weightier than the malt of the same denomination which was distilled by itself in these experiments.

No malt from bigg of the 3d quality was left for distillation. It was improperly expended in the brewery, or distilled along with raw grain. But, if we turn back to the 60th and 61st brewings, we find that malt of this description, weighing 33.5 lib. when kiln dried, and 34.651 when ground for distillation, was mixed with two parcels of raw grain, the average weight of which was 46.562 lib., and yielded only 15.622 gallons to the quarter, as the malt was from grain only 44.086 lib., or above 2½ lib. less than the raw grain with which it was mixed. I certainly do not underrate the bigg malt of 1804, of this weight and quality, when I state its produce at 14 gallons per quarter.

Supposing, then, English barley malted (of this quality) to produce, as it did, - - - - - 20.881

And Scotch barley, as it also did, of the same quality, to produce - - - - - - 18.612

Scotch bigg malt, from grain only 44.086 lib. per bushel, to produce, as above, - - - - - 14.

the average produce of Scotch bigg of the 3d quality, would be much more inferior to the malt from barley of the 3d quality, than that of the 1st or 2d qualities.

I must, however, observe, in justice to the barley, that what is called 3d quality of English grain, was, as already said, really better than what was called the 2d barley of that year; and that the Scotch barley malt, which was distilled as 3d quality, was equal to the best quality of ordinary years.

Taking into our minds a general view of the whole, the results would stand thus.

1st English - 21.945. 2d do. 20.785. 3d do. 20 881. Aver. of 3 kinds 21.204.
1st Scotch Barley 20.261. 2d do. 19.059. 3d do. 18 612. Average is - 19.244.
1st Scotch Bigg 17.788. 2d do. 17 065. 3d do. 14. Average is - 16.284.

At this rate, the English barley of 1804 was above 30 *per cent.*, and Scotch barley 13 *per cent.* better than Scotch bigg malted, notwithstanding the greater dilution and more perfect attenuation of the worts and wash from Scotch bigg.

But it is impossible for me to avoid rejecting the experiments on the distillation of pure malt made of Scotch barley, when I find that 2465.562 lib. of this malt of *the best* quality, by being

brewed into only 1201 gallons of worts, and attenuated from 51.2 to 4.5, yielded only 142.414 gallons of spirits; while 2308.125 lib., or 7 *per cent.* less of the 3*d quality* of English malt, yielded 148.931, or 4¼ *per cent.* more spirits, in consequence of getting 1588½ gallons of water, and being attenuated from 34.8 to 0.7; also when I find that Essex malt of 38.433 lib. per bushel, produced nearly 3 gallons (or 2 *per cent.*) more spirits than Scotch barley malt of 42.0083 lib., or above 9 *per cent.* weightier per bushel, owing to the Scotch barley malt being attenuated only from 39.7 to 4.6. Imperfect fermentation, and unequal dilution, ought to be avoided in national experiments; and where they do occur, they must be rejected, as not leading to any fair conclusion.

May I now be permitted to make one general remark. All Scotch barley at present has an allowance of 15 *per cent.*; and I readily acknowledge that I think it ought to have a still further deduction from the malt duty that is paid on English barley. But with respect to bigg, notwithstanding all that is stated in this Report concerning the numerous experiments which were made in the brewery and raw grain distillations, the real merits of the question must turn upon the few experiments, which are to be considered as fair trials, in the distillation of pure malt. Here it is to be noticed, that a quarter of malted English barley, of the 3d quality, yielded 20.88 gallons of proof spirits, while a quarter of the best Scotch bigg, when malted, produced 17.788 gallons, or 18 *per cent.* less than the lightest English barley had done. Also, the average of the four English kinds distilled was 21.389 gallons per quarter, while that of the best Scotch bigg was only 17.788, or above 20 *per cent.* less than that average; and the 2d bigg, when malted, which was far superior to the best biggs of ordinary years, was 17.065, or 25½ *per cent.* less than the average of English grain, even in 1804, a most unfavourable year for these experiments.

It is really matter of astonishment to me, that the calculations in the Report were not made from a comprehensive view of the whole distillations of pure malt, with a particular attention to the different parcels and kinds distilled, and with more accuracy in the calculations. If these things had been done, the gentlemen who conducted these experiments, instead of disputing whether malted barley was 8 or 14 *per cent.* superior to malted bigg, would have seen that, even in 1804, the former was more than 22 *per cent.* superior to the latter.

VI. It is proper, however, that I should take notice of Dr Thomson's conclusion from these Experiments, in which he insists that the difference between the two kinds of malt is 14 *per*

cent.,

cent., while Drs Hope and Coventry make it only 8 *per cent.* Here I need only remark, that though Dr Thomson views his subject in different lights, and very properly rejects both the value of raw grain, as a standard for determining the value of malt, and also the produce of malt, without taking into account the quantity of grain it contains, he falls into an error when he takes the medium between the value of raw grain malted, and that of pure malt, as the rule for fixing the relative quality of the different kinds of malt. By doing this, he halts between two opinions, and is subject to the inconveniences of both, without enjoying the advantages of either. From the great inequality of conducting every part of the malting process; from the time that the grain was thrown into the malt-steep to the time it was taken off the kiln; where the period of time in steeping varied from 44 to 119 hours; where the time the malt lay on the floor varied from 8 to 20 days; where grain of the same weight decreased 8½ *per cent. in* the 100, or increased 11 *per cent. upon* the 100; and where every part of the malting process, and also where the temperature of the kiln in drying the malt, varied so much, it becomes impossible to adopt any fair and correct mode of comparing the different malts, except from calculating from the produce of a given quantity,—for example, a quarter of the malted grain of the different qualities and denominations.

VII. It only remains that I consider, very briefly, Dr Hope's Letter to the Commissioners of Excise.

After what has been said, it is unnecessary to make many remarks on this gentleman's difference of opinion from Dr Thomson, whether the malt from bigg in these experiments be 8 *per cent.*, or whether it be 14 *per cent.* inferior to malt from barley. I shall only observe, that it appears extraordinary, that a gentleman, who strenuously defends the distillation of raw grain as a *method of ascertaining the comparative value of malt*, and who founds a number of calculations on the comparative results of the raw grain distillations, will admit of no reference to the quantity of raw grain contained in a bushel of malt, *while he estimates the values* of different kinds of malt. With regard to Dr Coventry, who is a man of real science, and one of the most liberal and candid men with whom I ever conversed, I am inclined to think, that he was not originally a favourer of the distillation of raw grain, and that he is not at present disposed to support either the experiments in the brewery, or those in the distillation of raw grain. And with respect to Dr Thomson, who is also a man of science, and a rising character in the literary world, I owe it as a piece of justice to him to state one remarkable fact, viz. that the purchasers of bigg, employed by the

Board of Excise, had classed a quantity of Aberdeen bigg, which was considerably above 48 lib., among the Scotch biggs of the 2d quality; and that Dr Thomson, with that candour which becomes a man of science, altered this designation, and inserted the parcel among biggs of the 1st quality. On this account, I must certainly consider him, as I do his colleagues, as a man of science, candour, and integrity; and while I avoid discussing their little differences of opinion, I shall be sorry to give any of them the least cause of personal offence, notwithstanding that I feel myself bound to make my remarks on their experiments, at once with freedom and with becoming respect.

May I now request attention to a short summary of what has been said.

The barley of England in 1804 was worse in point of quality, and both the barley and bigg of Scotland were much better in this respect than they are in ordinary years; therefore the above experiments, though the samples had been fair, and every part of the various processes properly conducted, could not be decisive of the comparative values of the different kinds of malt on an average of seasons. This deserves to be particularly attended to, as I have reason to believe that the learned gentlemen who conducted these experiments will certify it in the most ample manner. But, independently of this important fact, there are many objections to the Experiments detailed in the Report, and to the conclusions drawn from their different results.

1. The specimens used in these trials, partly owing to the instructions given by the Commissioners of Excise, and partly owing to the interpretation put upon these instructions, or to the manner in which they were carried into effect, were improperly selected at first; and they were afterwards as improperly arranged into classes of 1st, 2d, and 3d qualities of grain.

2. The whole malting process was most irregularly conducted, —from unequal degrees of skimming off the light corns in the steep,—from unequal periods of steeping the grain,—from unequal increase in the process of malting,—unequal periods on the malt-floor, and unequal degrees both of malting and kiln drying.

3. In the brewing process, disproportioned degrees of dilution, or the pouring of a much greater quantity of water upon the malt from bigg, than on that from barley, occasioned the former to produce a comparatively greater quantity of extract than it would have yielded if both kinds of malt had been treated with their due proportion of water. In this process, also, the neglect of taking the specific gravity of the different worts, in more than half the whole number of brewings; and also, the neglect of taking the weight of the different worts by the imperfect saccharometer which

which was used, the number of errors in calculating the quantities of solid extract, and the discrepancies between quantities of that extract as stated in the Report, and their amount by correct computation, both from the specific gravity of the worts, and the saccharometer degree, as it is called, of Dring and Fage's instrument, destroy all faith in the conclusions which are drawn from the comparative quantities of solid extract which are contained in the greater number of the brewings, and consequently from the general results of the Brewing Tables.

4. The numerous and incorrect experiments, in distillation from mixtures of malt and raw grain, were not only unauthorized by the Lords of the Treasury, and foreign to the question at issue, but really were not fair trials of the comparative values of the different kinds of malt;—as the raw grain of barley used in these experiments, even after undergoing the operation of the fanners, was inferior to the barley which was steeped for malting, and the raw grain of bigg, distilled along with malt, was much superior to the bigg which had been malted; and as the malt used in the distillery was of very different value from that used in the brewery: Also, from the greater quantities of water which were poured upon the raw grain in malt of bigg, than on the raw grain in malt of barley; and, consequently, from the more complete attenuation of the wash of the latter, a comparatively greater quantity of spirits was extracted from the bigg than from the barley. Further, there are such gross errors in the statements of the specific gravities, both of the wort and the wash of the raw grain, as would, if the quantity of extract be computed from these, imply impossible results in the quantities, both of solid extract, and of proof spirits.

Finally.—The very few experiments made in the distillation of pure malt, which ought to have been the principal object of the Reporters, are liable to the same objections, of too little water being poured upon the malt, and of the imperfect attenuation of the wash of Scotch barley. Very gross errors are also committed in taking the specific gravity of the worts, which render the quantity of solid extract, found by correct computation from that gravity, so extremely different from that which is stated in the tables. Also, very unfair specimens of malt from bigg are used in the distillation of pure malt. The bigg malt of the 1st quality, distilled, was highly toasted in the kiln, and was 14$\frac{1}{7}$ *per cent.* weightier than the average weight of bigg malt used in the brewery; and above 15 *per cent.* weightier than the 1st bigg malt brewed. Likewise three quantities of the very best malt, and two quantities of malt somewhat inferior, were used under the name of bigg malt of the 2d quality; and not a single pound of

bigg

bigg malt of the 3d quality (or weakest bigg that was malted,) was used in this species of distillation. Yet if this inferior malt had been used in its proper place, and an average fairly computed, from the three qualities of bigg malt compared to those of malt from barley, it would have been found that the former, even in 1804, was above 30 *per cent.* inferior to English, and about 20 *per cent.* inferior to Scotch barley malt. It is matter of surprise, that in this situation there could have been any difference of opinion about bigg malt being inferior to that of barley, either 8 or 14 *per cent.* It is evident, that from the irregularities of the malting process, we must form our computations, neither from the value of a bushel of raw grain, nor of a bushel of malt, but from that of a bushel of raw grain malted; and even, upon the data contained in this Report, malted barley of crop 1804 will be found, by correct calculation, to be from 22 to 25 *per cent.*, superior to bigg, although the bigg of that season was far superior to the bigg of ordinary years.

GEO. SKENE KEITH.

FOR THE FARMER'S MAGAZINE.

Cursory Remarks on the present State of Agriculture and Rural Economy of the Highlands, &c. made in the latter end of May, and beginning of June 1807.

LEFT Edinburgh on the 28th of May, and took the Stirling road by Linlithgow. The fields in the immediate vicinity of Edinburgh are mostly occupied in raising greens, potherbs, and fruits, or in pasture. This seems to be the common and most profitable system of economy in the neighbourhood of every great city. An abundance of dung is necessary to produce the common culinary vegetables; and milk and butter are articles which always meet a ready market in a crowded population.

The general appearance of this part of Mid-Lothian, on leaving Edinburgh, is rather flat, with a gradual rise to the westward. On the other hand, a few detached eminences, of no great height, diversify the prospect. The whole is adorned with plantations, and interspersed with gentlemen's seats and villas in well chosen situations. The soil of the fields we passed, seemed mostly to consist of a strong black or clay loam, enclosed and subdivided with thriving thorn hedges into pretty large divisions, which appeared to be in a high state of cultivation. The wheat crops, which occupy a large proportion of this tract of the country, had a very promising look, some few instances excepted. Those

fields

fields in sown grass were, I think, more irregular; in some places having the appearance of a weighty crop, in others very indifferent. The practice of drilling beans, or peas and beans together, is generally adopted, though several fields were sown in the broadcast way. Few of these bean fields were in so clean and husbandman-like a state as might have been expected, considering the fine weather during the preceding fortnight, a great many of them being considerably advanced, without having got a first hoeing. The operation of hoeing, when circumstances admit, ought not to be delayed much longer than the young plants have got fairly above ground. Beans, being an early sown crop, must lye a considerable time under the clod; and the native weeds of a more hardy nature will soon overrun and choke them, if not kept under by the hoe.

The situation in which the fallows were lying, was very irregular; one field in particular, on the right-hand side of the road, of considerable extent, was overgrown with grass and other weeds resembling an indifferent corn crop. There were four ploughs going upon it to very little purpose; for, instead of crossing the ridges, they were just reversing the furrows, consisting of a stiff clay soil. After crossing the water of Almond, a field of oats, in a fine soil and situation, appeared quite covered with weeds, where something of a very different nature might have been expected. Some large fields of peas on the left looked clean and thriving. Near Linlithgow, the fields are divided into more minute portions. A heavy shower came on a little before we got to Linlithgow, and deprived us of the enjoyment of the beautiful rural scenery this fertile district presents on every hand. The venerable remains of the palace and cathedral command the attention of every traveller.

From Linlithgow to Falkirk, the face of the country is agreeably diversified with rich fields, uplands rising with an easy swell, and elegant mansions surrounded with woods both natural and planted. The soil is a rich loam, under a masterly style of cultivation. The enclosures are uniformly formed with thorn hedges, which, in the low and sheltered situations within our view, were in a very thriving state, and in many places neatly trimmed. The quality of the soil may be pretty accurately ascertained, from the state of the hedges which intersect it. When these are thick, flourishing, and of quick growth, it may fairly be inferred that the soil is good. When they are thin, stunted, and overgrown with moss, they afford a certain indication of a poor, cold, or barren soil. The wheat crops, particularly in the low-lying grounds, were rich and luxuriant, perhaps too much so to ensure a good return, should the season prove wet and showery.

ery. In the more bleak and elevated exposures, they did not show such a full flush of blade. In general, however, this crop looked well hereabout; and the like observation will apply to the other crops in this district.

The Carse, or low grounds along the side of the Forth, exhibit a beautiful scene of rich culture; but as this tract lies at a considerable distance from the road, any certain conclusion could not be drawn respecting the state of the crops. A thick drizzling rain having come on as we drew near Falkirk, prevented us from enjoying the surrounding scenery to advantage. It was the market day at Falkirk, and the street was thronged with a crowd of people.

From Falkirk to Stirling the road continues through the same rich tract of country. The fertile carse grounds on the links of the Forth, with the windings of the river, and the Ochil hills rising to a great height in the back ground, presented a fine variegated scene as we proceeded along. Immediately on leaving the town of Falkirk, the road crosses the canal, under an arch of sufficient span for the breadth of the road. As the canal goes up the vale of Carron, a number of locks are in view; but we had not the fortune to see any vessels passing at the time, which would have rendered the scene more interesting. The village of Carron, where the very extensive iron works are carried on, is on the right, which is almost enveloped in a cloud of smoke. St Ninians, a populous and thriving village, where some considerable tan-works are established, was viewed in our road to Stirling, after crossing the rivulet of Bannockburn, so famous in Scottish history.

The situation of Stirling much resembles that part of the Old Town of Edinburgh adjoining the castle, being built on the ridge of a rock, having a considerable declivity to the south-east. The castle occupies the summit of the rock, and has been the scene of many a hard contest between contending kingdoms and parties in former times. The prospect from the ramparts is one of the richest that can be imagined; but a heavy rain falling at the time, gave us little opportunity of enjoying it.

After leaving Stirling, and crossing the Forth, we took the road for Dumblane, up the water of Allan. A high wind, accompanied with heavy rain from the westward, contracted our view of the Vale of Forth above Stirling within very narrow limits. Along the banks of the Allan, up to Dumblane, the fields appeared to be under a regular course of cultivation; but the soil becomes lighter and less fertile as we advanced. Several fields, however, carried good crops of grain and sown grass; and we observed some pastures in very good order along

long the road-side, on both sides of the river. Dumblane is a town of considerable antiquity. The houses, in general, have a decayed appearance, several of them being covered with thatch. The ruins of the cathedral show it to have been at one time a fine building. A part of it is still used as a place of public worship.

From Dumblane the road ascends, in an oblique direction, along the high grounds on the eastern bank of the Allan. We left Dumblane early on the morning, with a keen piercing wind from the north in our faces. During the night, a shower of snow had whitened the higher summits of the Grampians; and the whole country had the appearance of being almost a month later than the tract we had traversed the preceding day. The soil is cold, poor, and barren, and the general appearance of the country bleak and wild. Agriculture, however, is pushed a considerable way up the hills; and the line of demarcation, where sterility maintains her ground, and art and industry extend their influence, is strongly delineated. The brown and rugged face of nature forms a striking contrast to the green surface produced by the hand of cultivation. The hedges, the plantations, and natural-grown trees, are poor, starved, shrivelled plants. Some level meadow-ground lies along the sides of the Allan, which might receive great benefit from straightening and embanking the course of the stream.

On gaining the summit of the rising ground which divides Strathallan from Strathearn, an extensive and varied prospect lay before us. To the eastward there was a wide stretch of level country, towards the lower parts of Perthshire; to the left, and directly before us, the rugged and rocky summits of the Grampians grizzled with snow. As we got down the hill towards the Earn, into the valley or strath distinguished by that name, we observed some pasture fields laid out in a tolerably good state, near the village of Muthil. The soil here appears to be light, gravelly, and covered with stones. The barley or *big*, which is much sown in these higher grounds, was just appearing above ground, and, in some places, not so far advanced.

The town of Crieff, noted for its cattle fairs, is on the opposite bank of the Earn; the approach to which is directly up a steep bank. Drummond Castle, a beautiful seat of the Perth family, is situated on an eminence, on the opposite side of the river, surrounded with numerous thriving plantations. At Crieff we left the public road northward, and went up the strath as far as Loch Earn. This is a pleasant, beautiful valley, finely wooded and ornamented with gentlemen's seats. Ochtertyre, the charming residence of Sir Patrick Murray, is delightfully situated in the bosom

bosom of an oak-crown'd hill, with a fine lake below, like a mirror, reflecting on its surface the rich scenery which overlooks it above. The pleasure grounds, on an opposite hill, are laid out with much taste. At the church of Monivaird, the vale opens, where some fields of fine level ground seem to be pretty well improven. Here we saw a piece of moss, or marshy ground, improving after the Ayrshire method, intersected with deep ditches, and thrown into narrow beds. The pleasure grounds and fields round Lawers, the seat of General Robertson, appeared to be managed in a neat and becoming style of husbandry; as were likewise some fields in the neighbourhood of Duneira, a beautiful sequestered summer seat of Lord Melville's. At the church of Comrie, the vale extends to a considerable breadth, and again contracts before we reach the lake. The sides of the hills are beautifully ornamented with plantations, forest trees, and coppice woods; while their summits, black with heath, or grey with rocks, rise to a great height on either hand. Loch Earn is a fine sheet of water, extending about eight miles in length; and, when we reached the foot of it, the sun, just sinking beneath the horizon, illuminated the surface of the lake with his setting beams, in a most charming manner. The peasantry were busy in taking out their dung for their bigg, or in sowing and harrowing that crop.

From Strathearn we crossed over a wild range of hills, up Glenlednock, and across Glenalmond, till we regained the public road at Amulree, about eleven miles beyond Crieff. The hills on this tract of Perthshire are lofty, steep, rocky, and bare; affording a scanty pasturage to the sheep and black cattle which graze upon them. From the great elevation of these hills, in a central part of the island, they must be stormy in winter. The sheep are of the black-faced kind, but smaller and lighter than those in the upper parts of Tweedale and Clydesdale. Excepting their tups and hogs, they are generally unsmeared, a circumstance which must lessen the quantity of wool, and likewise materially injure the health and comfort of the animal. Their black cattle are likewise of a smaller size than those to the southward, and generally horned. We saw large quantities of snow lying on the sides of these hills.

From Amulree to the banks of Tay, the country presents nothing but a bleak waste, covered with heath, and almost wholly destitute of cultivation. On this tract we saw vast numbers of black cattle and horses, of the small Highland breed, with sheep of a small size. The banks of Tay, where we crossed by Aberfeldie, are beautifully ornamented with birch woods. The vale of Tay here presents some rich fields, the crops upon which look-

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ed well. The rising grounds, on both sides, are cultivated a good way up the hill; but the soil seems to be light after leaving the valley, and the crops late, as the fields had generally the appearance of being lately sown. The hills to the westward, on the sides of Loch Tay, rise to a very great height; having large quantities of snow upon their summits, which are pointed and rocky. The Tay here is a pretty large river, and forms a general drain for the wide and mountainous district of Breadalbane.

Whether these hills could be more profitably employed in rearing the Cheviot and other fine-wooled breeds of sheep, still remains to be determined. Should they thrive equally well as the black-faced kinds, in this wide and extensive district, their introduction would be a great national advantage. From the very superior value of their wool, the farmer would be enabled to pay a much higher rent; while our great staple manufacture would be much promoted. Some of the mountains in Northumberland, Roxburgh, Selkirk and Dumfries shires, where this kind of stock is brought to the greatest perfection, are not much less elevated than those; though it is probable that they may possess a better soil, and produce better pasturage. In Inverness-shire, near Fort Augustus, and even in Ross and Caithness-shires, the Cheviot sheep have been introduced, with every prospect of success. Were the ground not overstocked, and a suitable portion of the lower and better sheltered part of the farm reserved for winter pasture, there can be little doubt but that they might be introduced with safety, even among the highest hills in Perthshire, provided they were managed with the same economy, and treated with that care and attention which is paid to them in the Border counties. One thing, at least, is certain, that this range of hills is much better adapted to the rearing of sheep than black cattle; which last practice, though formerly most prevalent, is now much on the decline.

From the inn at Taymouth the road leads a little way up the north side of the Tay, ascends along the banks of a deep, rapid stream, and winds around the base of the mountain Shiechallion, till it falls into the valley watered by the Tummel, a rough, deep, and turbulent stream. A few spots of cultivation, intermixed with pasture grass, appear in this valley. The surface, in many places, is literally covered with large round stones, of a species of black or grey granite. The general appearance of the country is dreary and desolate. From Tummel bridge, the country displays the same rugged and desolate appearance; the road winding, in a circuitous manner, through glens, and over rising grounds, among hills and lakes, till it reaches Dalnacardoch and

Dalwhinnie,

Dalwhinnie, the last of which is in the district of Badenoch, in Inverness-shire. The old military road, though not always conducted with a view to the ease of the traveller, is, in general, better executed than it seems to have been planned. The inns at Taymouth, Dalnacardoch, and Dalwhinnie, afford good accommodation; that at Tummel bridge, however, is an exception.

From Dalwhinnie to Pitmain, the country opens a little, with more of level ground betwixt the hills. Some fine level fields on the banks of the Spey, near the inn at Pitmain, seem to produce tolerably good crops of oats and bear. The upper grounds are hard and bare, and covered with stones. The crofting system is here very generally practised. The population in this district must be very considerable, from the great number of cottages and small fields upon the road side. Their small spots of ground under cultivation scarcely deserve the name of corn fields. They were then (1st of June) busy in carrying out their dung for their bear land, or potatoes; and their husbandry utensils, and mode of labour, strictly coincided with the appearance of their fields and cottages. They were, however, giving their fields a most plentiful dressing of dung; and their corn crops, in many places, looked very promising. Below Pitmain are some fields, which would be greatly improved by draining and embanking; which has been partly attempted, but not completely executed. On the higher grounds the soil consists of a light, thin, gravelly stratum of earth, covered with heath and birches of a diminutive growth. Before we got to Aviemore, which is on the border of Murrayshire, there are a great number of trees of that species called the weeping birch, of a peculiarly beautiful appearance, which here rise to a great height, and are straighter than the common birch. On the opposite banks of the Spey are immense forests of natural firs, which seem to grow to a very considerable size.

The road here leaves the Spey, and, after crossing the water of Dulnain, traverses a tract of flat coarse moor ground, till, winding up a steep glen, it again descends into the valley watered by the river Findhorn, the banks of which present a few spots of cultivation. The soil seems to be light and gravelly. The hills are not so steep and elevated as in Badenoch and Braidalbane. From the Inn at Freeburn, a little north from the Findhorn, there is the same continued tract of black heathy moors, on which sheep and black cattle of a diminutive size were pasturing. Both sheep and cattle were very lean, and had the appearance of having suffered much hunger during the winter or spring. As we entered the valley divided by the Nairn, the same scene of Highland cultivation was observable as we had seen in Strathspey;

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—a numerous population, wretched huts, a light soil, late crops, and the most awkward utensils of husbandry. Having gained the summit of the rising ground beyond the water of Nairn, a more inviting prospect lay before us. Here the Murray Frith, the peninsula of Cromarty, the cultivated fields along the coast, and round the town of Inverness, and the hills of Ross-shire rising to a great distance, formed a striking landscape. As we advanced, Fort-George could distinctly be perceived on a point of land running into the frith, with the moor of Culloden, and a long stretch down the shore on our right; while the elevated summits of the hills in Lochaber were at a great distance on the left; with the spires of Inverness, and the shipping in the harbour, below us. The fields on the high grounds to the eastward of Inverness, are a dry gravelly soil; but those on the sides of the Ness, particularly on the north-west side, are a rich loam, and managed in a becoming style of husbandry. On the low grounds the several crops looked well, some fields carrying rich wheat; others, sown grass, equal to any in the Carse of Falkirk.

Inverness is a handsome, well-built town, situated on both sides of the Ness, and connected by a substantial bridge of seven arches. It has a considerable share of trade; and manufactures of different kinds have long been established there. The salmon fishing in the Ness is very productive. The inhabitants are gay and elegant in their appearance, and said to speak the English language with greater purity than in any other part of Scotland,—which may be pretty correct, when applied to the higher ranks. The canal, at present going forward to connect the Murray Frith with the Western Sea at Fort William, is a vast undertaking, and, when finished, will prove an incalculable benefit to the coasting trade of the island. The bason at Clachnacharry, where the canal enters the frith, is nearly finished; and the digging of the canal is carried a good way up the vale of the Ness. Several of the locks are considerably advanced; and a mole or pier, to the westward of the entrance to the bason, is at present forming. The expense of these works will bring much money into the country, while it gives employment to a great number of hands, and inures them to habits of labour and industry.

From Inverness we proceeded up the side of the frith, at the head of which we crossed the river Beauly, at the village of that name. Around the sides of the frith, and at the head of the bay, a fine tract of arable ground is extended, well cultivated, and bearing good crops, which is let at high rents. From Beauly to Dingwall the road crosses a bleak heathy moor, of a thin light

soil, a considerable part of which is laid out in plantations, and a few spots are cultivated in a very imperfect manner by a great number of small farmers. On the banks of the Conan, the soil is better, consisting of a clayey loam. A great deal of wood, both natural and planted, grows on the banks of this river. Dingwall is a royal burgh, situated in a vale at the head of the bay of Cromarty, and, consisting of one principal street, is reckoned the second town in Ross-shire.

From Dingwall we turned by Strathpeffer to Conlin, an inn on the road to Lochbroom. The valley of Strathpeffer contains some rich ground, but is narrow and confined by high hills, and not improved to that perfection its natural advantages seem to point out. Near Conlin, the fields and pleasure grounds of Coul, the property of Sir George MacKenzie, Baronet, appeared to be managed in a superior style of husbandry. Several fields, both in crop and pasture, were in excellent order. Here we saw a flock of Cheviot sheep, which seemed to thrive well.

From Conlin to Lochbroom the country is rugged, mountainous, and rocky, covered with heath, where a great number of black cattle, horses, sheep and goats, have an indifferent pasture. Many natural woods grow on the banks of the rivers, which descend to the eastward. Cultivation has made some feeble efforts to display her industry; but the soil and climate are inimical to her operations. Some green spots here and there discover her progress; but these are rare, amidst such a vast tract of waste. On the sides of Lochbroom, the hills are steep and rocky down to the water's edge. A small spot of level ground on the sides of the river which runs into the bay is under cultivation, and seemed to yield tolerably good crops, but, under the system of cultivation at present practised, cannot be made to give any great return. Along the sides of the hills, small detached pieces are laboured with the *cascroom*, an instrument familiar to those only who are in the most backward state of improvement. Lochbroom is esteemed one of the best herring stations on the coast of Scotland. Ullapool is a newly established and thriving fishing village, about six miles down the bay on the east side, which may *in time* become a town of some importance.

From Lochbroom, we returned by the same route to Inverness. The newly established tryst or fair at Beauly, for wool and sheep, was held on the day we past through that village; and the competition for the premium granted for the best tups, was to be determined at that time. There were only three lots, of six tups each, shown, which, I suppose, would each gain a premium. They were of the black-faced kind, and seemed to be pretty good specimens of that species of stock. A respectable meeting of proprietors

proprietors and farmers assembled on this occasion; and the prices of wool were nearly equal to those of last season.

From Inverness, we took the road to Fort William, which lies along the south-eastern bank of the river Ness. A great number of acres are laid out in plantations along the banks and rising grounds on the sides of the river. The steep banks along the Ness, are here covered with broom and furze, which, at this season of the year, decorated with a full profusion of blossoms, appeared 'unprofitably gay,' and had a most brilliant show. We observed some part of this fine vale completely in a state of nature, though certainly capable of much improvement, from its situation on the banks of the Ness.

Loch Ness is a fine sheet of water, extending twenty-two miles in length in a direct line from north-east to south-west. The old military road lies along its eastern banks. For a considerable way up the side of the loch, the road is quite level, keeping parallel to the water, through a fine coppice wood, intermixed with larger trees, consisting of birch, ash, alder, &c. which extend a considerable way up the hills on each side of the lake, while the rocky, steep and elevated summits of the mountains rise to a great height above. In this tract we saw a number of sheep which were of a better shape and size, and in superior condition to most of those to be seen further north.

After passing the inn at Boleskine, the road leaves the side of Loch Ness, and winds up the rugged banks of the Foyers, which are beautifully shaded with the weeping birch. The great fall in this river claims the attention and admiration of every traveller. We did not see it to the very best advantage, though the river was a good deal swelled by the rains which had fallen the preceding day. It is a grand object; presenting a considerable stream of water precipitated over a rock upwards of two hundred feet of perpendicular height. During its fall a part of it is converted into vapour, or spray, which is seen rising like smoke at a distance, when approaching it. After crossing the Foyers, along the banks of which a good deal of level ground is stretched above the falls, (some of which is under cultivation, but the crops appeared late and unpromising), the road for some miles goes along the top of a pretty high ridge, and then descends by the side of a loch, and down a steep bank, across a rapid stream finely fringed with underwood, when Loch Ness again appears in view. At the head of the loch, on a spot of rising ground, surrounded with fine green fields, is placed Fort Augustus, a neat, regular fortification, with commodious barracks. It is a handsome spot, and forms a striking contrast to the rude scenery in the neighbourhood.

To the south of Fort Augustus, on Glengary's estate, are some farms stocked with Cheviot sheep, which have succeeded very well. Glenurquhart, Glenmorrison, and Glengary, are vallies which run a considerable way into the country on the northern side of this great chain of lochs. Loch Oich, at the foot of Glengary, is about five miles distant from Fort Augustus. This loch is about three miles in length; and from Loch Oich and Loch Lochy, the distance is one mile. This isthmus is the highest point of land betwixt Inverness and Fort William in the course of the Caledonian Canal; and this part of the work, from the irregularity of the surface, will require a deep cut to connect the two lakes. Loch Lochy, like Loch Ness, extends in a direct line about ten or twelve miles towards Fort William, and is surrounded with steep, rocky hills, intersected with gullies and rapid streams. The hills on the eastern side appear to afford a better pasturage than those on the west. Near the foot of Loch Lochy, the vale opens; and the road here leaves the side of the lake and stretches to the eastward till it crosses the Spean, a deep, rapid river, which drains a large tract of country in Lochaber. At this turn of the road, Bennevis, the most elevated mountain in Britain, appears in view, presenting a bold and rugged front, spangled with large tracts of snow, which reach a long way down the sides of the hill. The upper part of this mountain seems to be a huge pile of rocks; but the lower grounds and round the base, appear to afford pretty good pasturage. Most of the ground in the vicinity of Fort William is covered with heath, except some low carse ground at the head of the bay, and in the neighbourhood of Corpach, where the Canal enters the sea, about a mile to the northward of the mouth of the river Lochy. A considerable progress has been made in the work at this end of the Canal. The ruins of Inverlochy Castle are upon the very edge of the river, and Fort William at a little distance on the south bank of the Nevis. Gordonsburgh, a neat thriving village, is immediately adjoining on the shore. This arm of the sea is a celebrated station for the herring fishery. The coasts here, like those of Lochbroom, are bold and steep, except a tract of low ground at the estuary or entrance of the Lochy into the sea. A few fields are under cultivation, but of no considerable extent.

From Fort William we took the old road to Kingshouse, across the hills, a most difficult and disagreeable road to travel. This road, carried in a zig-zag direction over the summit of a high and rocky hill, is out of repair, being little frequented, and in some places scarce passable. The hills in the neighbourhood of Fort William afford pretty good pasturage; but, before we reach the head of Lochleven, an arm of the sea, which separates Inverness from

from Argyleshire, they are steep and barren, being almost entirely covered with stones, or small patches of heath where there is any soil for it to grow upon, the most of the way to Kingshouse; affording the most dreary and desolate prospect imaginable.

From Kingshouse to Tyndrum, the road crosses over the same tract of waste and mountainous country. It is thinly inhabited, being generally occupied in pasturing sheep and black cattle. The road here is in good order, owing, I suppose, to the small repair that is upon it, and the substantial manner in which it has been formed; but the accommodations for travellers are very indifferent. The distance between Fort William and Tyndrum by the road we took, is forty miles; and the central station at Kingshouse affords very poor entertainment for passengers.

Near the Inn at Tyndrum, there are a number of cottages of a mean appearance, with small spots of arable adjoining, belonging, I suppose, to the workmen employed in the lead mines there. After crossing a part of Argyleshire, the road enters Perthshire, at the head of the vale of Strathfillan. A few miles below Tyndrum, the road strikes to the westward till it reach the valley at the head of Lochlomond. The face, or appearance of the hills, improves a great deal as we enter the vale of Lochlomond, affording a much finer grazing than those to the northward. On some of these pastures the Cheviot sheep have been introduced lately.

We entered the valley at the head of Lochlomond, by a steep path, through a fine thriving grove of young oaks and birches. The ride down the side of Lochlomond was highly pleasing. A slight shower had fallen before we entered the vale; and the woods, in full verdure, shed a rich perfume. The air was calm, the surface of the lake was as smooth as a mirror; while the haze in the atmosphere contributed to augment the distinctness with which the water reflected the rocks and woods wherewith its banks are so finely decorated. The trees, mostly oak, ash, beech, alder, mountain ash, firs, hollys, and hawthorns, were in full blossom. Further up, the hills are rocky and precipitous, with huge fragments scattered along the road side at the bottom, which seem at some former period to have been separated from the rocks above. The road winds in an irregular line among the rocks, sometimes rising with a steep ascent to a considerable height above the level of the lake, and again descending to the water's edge. A number of cottages are interspersed among the openings in the woods, with their small spots of cultivation adjoining.

After stopping to feed our horses at Tarbet, we again proceed-

ed along the banks of the lake. A great number of persons were employed in stripping oak wood of its bark, on both sides of the loch, for which article the proprietors draw a very considerable sum annually. A part of the road here has been newly formed upon an excellent plan, being kept on a level with the lake, and following every winding of the rock. At Luss the lake expands to a great breadth, where it is ornamented with a number of islands finely wooded, and displaying a rich and picturesque scenery. To the eastward, Benlomond, rising with majestic dignity, overlooks the beautiful scenery of his subject lake, and a rich tract of country to the southward.

From the bottom of Lochlomond along the water of Leven, the face of the country assumes a quite different aspect. Rich cultivated fields enclosed with hedges—gentlemen's seats surrounded with thriving plantations—and populous manufacturing villages, appearing almost like one continued city—every thing wearing the face of successful industry. The fine monument erected to the memory of the ingenious Dr Smollett, on the road side, is a beautiful object, and attracts the attention and curiosity of travellers.

The fields around the bottom of Lochlomond, and on the sides of the Leven, consist of a rich clay or loamy soil, affording good crops and pasturage. We saw here some excellent fields of wheat, and sown grass. A great proportion is laid out in plantations and pleasure grounds. The black cattle are of a larger breed than those of the neighbouring counties of Perth and Argyle.

Dumbarton occupies a low situation. It consists of one principal street, level, aud well paved. The houses are unequal, many of them having the appearance of great antiquity. There is a considerable glass-work carried on at the upper end of the town; and it has some trade by sea, vessels coming close up to the back of the town. The castle is situated on, or rather includes within its walls, two points of an insulated rock, of considerable elevation, on the west side of the river Leven. It forms a very striking and picturesque object; and has been kept as a place of strength from a very remote period of antiquity.

The road from Dumbarton to Glasgow presents a succession of scenery highly interesting, and of a character directly opposite to that which we had surveyed the two preceding days. On leaving Dumbarton, for the first two or three miles, the crops had the appearance of being much hurt by the drought, the soil hereabouts consisting of clay, inclining to gravel. Some hills of no great height were on our left hand; on our right, the frith of Clyde, which we could trace as far down as Port-Glasgow and Greenock, with vessels going up or down the river. On each side,

side, fine pasture ground and cultivated fields. As we got nearer Glasgow, the country improved, displaying a wide and extensive tract of rich and highly cultivated fields. These fields are almost uniformly enclosed with thorn hedges. A great number of villas occupy the rising grounds, and adorn the prospect, as we approach the city. Most of them are elegant, and some of them magnificent, with gardens and pleasure grounds laid out with much taste. They are mostly the property of the wealthy and flourishing merchants and manufacturers of Glasgow.

The crops, in general, in the vicinity of Glasgow, had a very thriving look, though both the soil and cultivation were inferior to what is to be seen on the banks of the Forth. The fields of sown grass appeared to carry weighty crops; but, in general, there was less clover than customary on rich soils. Whether this was owing to the severe spring frosts, or that a larger proportion of rye-grass is preferred for horses food, is doubtful; but such a mode of management may be considered as scourging to the soil, rye-grass bearing a nearer affinity to a white crop, than clover or most of the other sown grasses. The turnip ground was working in many places; but, though several fields were sown, none of the young plants had got above ground. Potatoes had a promising look, the young plants being pretty far advanced in several places. Some fields of oats, particularly one of the potatoe variety, displayed the most promising crop of that grain to be seen on the road. Wheat was, in general, good; but scarcely equal to what we had seen in the neighbourhood of Edinburgh, and in Linlithgowshire. The canal, over which the road passes by a drawbridge, is an interesting object in relation to the improvement of the commerce and agriculture of the country. The traveller is struck with an agreeable surprise on seeing vessels moving through, or rather over, corn fields and hedges; for the tract of the canal is higher in many places, by means of the embankments, than the surrounding fields which are intersected by its course.

Glasgow is a populous and flourishing city. The streets are regular and the houses well built. The public and modern buildings are magnificent, and executed in an elegant style of architecture. It is certainly by far the most thriving town in Scotland, in regard to the commerce and manufactures carried on here in connexion with Port-Glasgow, Greenock, Paisley, and the many populous villages which form the suburbs of the city. In the principal streets, every house is a shop or inn, or devoted to some public occupation.

From Glasgow to Hamilton, the country has much the same appearance of fertility and high cultivation, as the approach to

the town from the westward. It was the market-day when we left Glasgow, and the road was crowded with people going into the town. Carts and baskets were loaded with articles of sale. Every thing had the appearance of wealth and plenty. The fields, both under crop and pasture, had a thriving look; though the cultivation, in general, as we got further up the Clyde, is not in the most finished style of neatness. The old mode of broad, crooked and high ridges, is still pursued in some parts; the bean crops, in many places, sown in the broad-cast way; and those in drills, cleaning in different places with the hand-hoe. The barley crop seemed in general to be late. The soil, as we got further up Clyde, and on the higher grounds, consists of a cold stiff clay, and must be difficult to manage, either in very droughty or very wet seasons. The horses in Lanarkshire are generally more strong and weighty than those on the eastern coast of Scotland; and they draw vast loads. The carts, like the horses, are stout and clumsy.

Hamilton is a town of considerable antiquity, irregularly built, and situated near the confluence of the Avon and the Clyde. The Duke of Hamilton's palace and pleasure grounds, are in the immediate vicinity of the town. From Hamilton to Lanark, the appearance of the country is more bleak and barren; the soil becoming poorer, and less fertile, as we advance to the southward. Along the banks of the Clyde, however, there are some fine rich low lying grounds. These are finely ornamented with plantations, and natural grown woods, interspersed with gentlemen's seats, and handsome farm-houses. In this district, a good deal of attention seems to be paid to the raising of fruit, considerable spaces of ground being laid out in orchards; almost every gentleman's place, farm-house, and even cottage, having one of a greater or less extent.

Lanark is a royal burgh of great antiquity, and the county town of Lanarkshire. It is situated on a rising ground considerably elevated above the course of the Clyde, the channel of which is here broken with deep falls, the banks being steep, rocky and confined. It was a *fair* day when we came through Lanark, and a great crowd of people were on the streets. From Lanark to Elvanfoot, after crossing the Clyde, we struck across the country nearly by the skirts of Tintoc, which is one of the highest hills in Lanarkshire. This part of the county is mostly devoted to rearing sheep, though a good part of it seems formerly to have been under cultivation, though now in pasture. Before we got upon the public road again up the Clyde, which has a very circuitous course here, it was getting dark; and a thick drizzling rain coming on, we reached the inn at Elvanfoot at a late hour.

The

The black-faced or short breed of sheep, is the common stock kept on these hills, though the Cheviot is beginning to be introduced on some farms, the very superior value of the wool of the latter kind giving them a decided preference over the other as a more profitable stock.

From Elvanfoot, the road is remarkably good, being wide, smooth and level, as far as the nature of the country will permit. On leaving the Clyde, the road falls into the Evan, a branch of the Annan. Along the banks of the Evan, it descends till within a mile or two of the village of Moffat, through a fine pastoral country. Moffat is a neat clean village, with a wide open street. Several of the houses are built with a kind of blue stone, or coarse marble, which has a fine appearance at a small distance. The celebrated Spa well is distant about a mile from the town. It was formerly much frequented by invalids during the summer months; but is not so much resorted to at present. The hills above Moffat are steep and bare, but afford a healthy pasture for sheep. The valley below spreads to a considerable breadth, and seems to be under a pretty good course of cultivation. Lime is much used as a manure, and its good effects are visible in converting the natural brown heath into rich and verdant grass pasture. The soil is gravel, or a light sandy loam on the low valleys, which produce good crops of oats, barley, turnips and potatoes. After getting a little down the vale of Annan, we croſſed over ſome riſing grounds, by a ſteep winding road leading to the water of Dryfe, which waſhes a fine green valley, and unites with the Annan a little above Lockerby, a market town on the Glaſgow road to Carliſle. The banks of the Dryfe are well cultivated and improven; and the crops, as far as we could obſerve, had a thriving appearance. A good deal of wood, both natural and planted, adorns the banks of that river. From thence we croſſed over a tract of hill country, for about eight miles, till we got into the valley watered by the Eſk, a few miles above Langholm, a thriving manufacturing village in the eaſtern diſtrict of Dumfrieſhire, and the firſt ſtage in Scotland on the road betwixt Carliſle and Edinburgh. This diſtrict is moſtly paſtoral, conſiſting of fine green hills of a moderate height, and now wholly ſtocked with the long or Cheviot breed of ſheep, and a few black cattle of the Galloway breed. The ſoil on the banks of the Eſk conſiſts of a dry gravelly earth, or a light ſandy loam, in the vallies; producing pretty good crops of oats, barley, peas, turnips, and potatoes. There are a number of fine natural woods on its banks, and a few plantations. The cultivated fields are moſtly encloſed and ſubdivided with ſtone walls. Here we terminated our journey, after traverſing

traverſing a great part of the central, northern, and weſtern counties of Scotland.

A few general remarks ſhall now be hazarded.

From the obſervations we had an opportunity of making, and the information received from others, in the courſe of the above journey, it appeared evident, that the population of the Highlands, which in many places is very great, was by no means proportioned to the means of ſubſiſtence they at preſent poſſeſs. A numerous population, without commerce or manufactures, and labouring under a defective ſyſtem of agriculture, and an unſuitable mode of paſtoral economy, in managing a tract of country peculiarly deſtined for that purpoſe, was a conſideration that ſtruck us moſt forcibly on viſiting that part of the country. The mountainous diſtricts of Perth, Inverneſs, Roſs, Sutherland and Argyleſhires, are better adapted to paſturage than any other purpoſe. The rearing and grazing of ſheep is more profitable, and conſequently ought to be adopted in preference to that of black cattle, the former being ſupported at leſs expenſe, and depending leſs on the labour and induſtry of man for their food in winter. They are naturally themſelves of more value in proportion to the food they conſume. Their wool, as an article of manufacture and commerce, has been a principal medium in promoting the proſperity of the nation at large. The introduction of ſheep-farming into theſe diſtricts muſt of neceſſity reduce the population very conſiderably; for, under ſuch a ſyſtem, a comparatively ſmall number of inhabitants, to what is at preſent on ſome parts of them, are ſufficient for the purpoſes of paſtoral economy. We do not, however, from what is ſtated above, pretend to infer, as ſome have done, that the general population of the north is too great, or that it ought to be reduced by any arbitrary or violent meaſures. On the contrary, no more is meant, than that the population of the north might be directed to more proper modes of employment and induſtry, for the general intereſts of themſelves, the country, and the ſtate. For when an exceſs of population is complained of as a nuiſance, it may be believed that there muſt be ſomething radically defective in the civil or political economy of the State. The population of any country muſt be accounted its greateſt ſtrength, as well as its trueſt riches, where its exertions are directed to promote the real intereſts and proſperity of the whole,—where the inhabitants mutually cooperate in advancing the public welfare.

The depopulation of the Highlands has been a theme of declamation for a number of years paſt; and it certainly has taken place to a certain degree, though not to ſuch an extent as to create any ſerious alarm in the breaſts of thoſe who wiſh to ſee their

their country prosperous and thriving. There may be fewer inhabitants in certain districts of the Highlands, than there were half a century ago; but the general population of Scotland is not decreased. In the same proportion that the population of some parts of the country has declined, that of the manufacturing towns and villages has increased, or perhaps in a higher ratio.

The introduction of sheep-farming into the Highlands, and the encouragement given to graziers from the South country, has been considered as the principal cause of this depopulation; and the policy of the present proprietors, in favouring this system, in preference to the old mode of economy practised by their forefathers, has been arraigned, by superficial reasoners, as a subject of the most alarming and serious concern to the State. It is evident, however, that the true interest of the landlords, as well as of the inhabitants, is connected with the success of sheep-farming, provided those parts of the country which are capable of improvement by cultivation are not thrown into sheep walks. If this is properly kept in view, there is ample room for employing the surplus population which the grazing system might spare from certain districts in the North. There are many tracts of low lying grounds, and along the coasts, which are capable of much improvement. The proportion of that under cultivation is but small, in comparison to what is at present in a state of nature; or, at best, under a very imperfect mode of culture. As the landlords are supposed to derive considerable profits from the introduction of sheep-grazing upon their estates, they might be enabled, without any detriment to themselves or their posterity, to let such grounds to the present inhabitants on improving leases and liberal terms. A greater number of black cattle, by this means, might be reared on less bounds than at present. Perhaps, in this case, it would be the true interest of both the landlords and the country at large, that a number of South country farmers should be invited to settle on their estates. It would show them what improvements might be effected by introducing a proper course of husbandry, and a suitable rotation of crops; and, at the same time, instruct and stimulate the natives to pursue the most eligible modes of industry and economy necessary for promoting their own interests and those of their country. Where the native inhabitants, however, are willing to perform what their present skill and capital enable them to do, they ought not to be wantonly turned out to gratify the avarice or caprice of a landlord, or the interests of a stranger. There can be no reason, either physical or moral, why a native Highlander may not improve his country as well as any other, provided he enjoys the requisite

requisite knowledge and means of improvement possessed by the other.

A more general introduction of the turnip husbandry, and a proper rotation of green and white crops, into the agriculture of of the Highlands, when the soil is adapted to such culture, might be productive of very great advantages to that part of the island. The turnip is naturally a hardy plant, at least a great variety of them come to perfection in very cold and exposed situations; and thrives on almost any dry soil, where a sufficiency of dung can be applied to the raising of them. When kept clean, and properly managed, turnips enrich the soil in a remarkable degree, particularly where they are eaten off with sheep. Where the ground is rich, and in good heart, it admits of being earlier sown; which is a great matter in Highland districts, as it produces grain of a better quality, and gives the chance of being earlier reaped.

A more general application of lime or marl as manures, would be productive likewise of the same advantages to the north of Scotland; and where they cannot be had on the spot, from the advantage of water carriage might be brought to most places in the North at no great expense. Scotland already possesses many advantages in this respect, and must, in the course of a few years, have the advantage over most other countries, when we consider the numerous public works, such as canals, roads, bridges, and harbours, now going forward or in contemplation. The advantages of water communication may be yet much further extended, by means of the many fine lakes and rivers with which this part of the island is particularly enriched. It is not easy to fix the bounds, or say to what extent the improvements in any country may be carried, when the spirit of enterprize and industry is fairly roused among its inhabitants; and there is no inducement more forcible than self-interest, where it is clearly discovered.

A better breed of horses might likewise be introduced into the Highlands, as, without such a previous measure, little solid improvement can be expected in the agricultural system. A vast number of the old breed of small poneys are still reared and bred in the northern counties; though there is no exaggeration in affirming, that a pair of good stout horses, properly fed, harnessed and trained, will perform more work, and to much better purpose, than a score of the present kind can be supposed to do. The implements of husbandry may be characterised in a similar manner; indeed it excited our surprise, that the husbandry of these districts, imperfect as it is, was so well executed under such disadvantages. *P.*

BRANCH II.

Agricultural Intelligence

At no period, ſince the commencement of this Work, has a more gloomy proſpect been in the way of the generality of Scottiſh farmers than at the preſent moment. Encumbered with heavy rents, taxed more ſeverely than other claſſes of the community, and obliged to pay a higher price for labour than hitherto known, in few inſtances can their ſituation be reckoned deſireable; but, when other circumſtances are taken into account, namely a bad harveſt, dull corn markets, and the depreſſed price of live ſtock, ſlender conſideration is called for to aſcertain that the condition of cultivators is melancholy and alarming beyond the experience of former times. To ſpeculate upon the iſſue, would ſerve no uſeful purpoſe. Probably it might produce a contrary effect, by paralyzing the efforts of thoſe ſo unhappily circumſtanced; therefore our details ſhall be limited to facts which cannot be queſtioned.

The opinion expreſſed in laſt Number, reſpecting the ſeveral corn crops, has been verified by the reſult; with the lamentable addition, that, in many of the northern and weſtern diſtricts, a large proportion of the crop, at the date of laſt accounts, ſtill remained in the field, expoſed to ruin and deſtruction from the elements, and much of it already in a ſtate approaching to rottenneſs, unleſs a favourable change of weather ſoon intervene and prevent ſuch a melancholy cataſtrophe. From all the accounts communicated to us, it appears that the ſeveral crops (wheat excepted) are every where of little bulk; indeed more ſo than in any year ſince the memorable 1800, when dearth raged through the land. Wheat, in every point of view, proves to be the beſt crop; and in ſeveral of the Engliſh counties it is eſtimated as exceeding the ordinary average, and of ſuperior quality to the grain of the preceding year. Barley is probably below par; but oats, beans and peas, are greatly defective; the latter articles particularly ſo. The failure of beans and peas ſhowed itſelf about the end of July, when a diſeaſe, appropriately called the *Black Jaundice*, ſeized them, and completely ſtopped further improvement. In no ſeaſon, within our remembrance, have beans and peas more generally failed than in this one. It was of no importance whether they ſtood upon a ſoil which was ſtrong or light, deep or ſhallow, rich or poor. On almoſt all they met with the like fate; and the produce is a ſmall ſhrivelled grain, hardly of a quality fit to be uſed for ſeed next ſeaſon, unleſs people are compelled to do ſo by imperious neceſſity. Whether the diſeaſe which infected theſe plants was occaſioned by inſects at the root or on the ſtalk, or by atmoſpherical influence, is an undecided queſtion; but the conſequences will be felt in more ways than one, becauſe in many diſtricts the working ſtock are chiefly ſupported through the winter months upon the fodder of thoſe grains. Suppoſing the fodder ſhould contain its uſual nouriſhment, which is a doubtful circumſtance, ſtill it will not go one half ſo far as in other years, having in a manner melted away before harveſting; of courſe, the expenſe of ſupporting working ſtock muſt be greatly increaſed.

Notwithſtanding

Notwithſtanding of the ſhort crop, and the alarming condition in which a great part of it remains, markets are not ſo materially influenced thereby as might have been expected, having on the whole been dull, and lower for wheat than in the preceding quarter. So far as reſpects wheat, the want of demand may be attributed to the full ſtock of flour on hand at the commencement of harveſt; to the general imperfect condition of grain, which would not allow of ſpeculation, eſpecially when the old ſtock in hand was conſiderable; and to the heavy loſs ſuſtained laſt ſeaſon by corn dealers, which makes them, in this one, ſhy of making extenſive purchaſes. The want of oats and beans muſt, however, ultimately cauſe a greater demand for other grains, and occaſion the prices of the ſeveral varieties to be more upon an equal footing than at this time.

This has been a bad year for the grazier, live ſtock of every deſcription having gradually fallen in value ſince midſummer. The fall may ſafely be eſtimated at 25 *per cent.* on many kinds of cattle and ſheep, though on good Highland wedders and Cheviot ewes it may not be more than one half of that rate. The rent of breeding farms has, for a year or two paſt, advanced even more than that of arable ones, therefore the depreſſion upon ſtock muſt be ſucceeded by ſerious conſequences to thoſe concerned in ſuch undertakings. The feeding farmers, who make annual purchaſes, literally gave away their graſs for nothing, having in many inſtances a difficulty of obtaining, for fat, the price originally given for lean ſtock.

The leguminous articles of potatoes and turnips, have in a great meaſure failed, and threaten to be of no great value. The firſt mentioned article cannot be reckoned as exceeding half a crop, whilſt the quality is imperfect, and in danger of being rendered worſe from the wet ſtate of the ground, in which one half of the potatoes are ſtill depoſited. Of turnips, fewer were ſown than uſual, and many fields failed. High prices have therefore been given for this root.

The important operation of ſowing wheat is tolerably forward in the early diſtricts; but in thoſe of a different deſcription it is preſumed the quantity ſown this ſeaſon will comparatively be of much leſs extent than uſual. Thin ſoils, ſteeped with rain, are unfit for receiving the ſeed grain, either periſhing it in the firſt inſtance, or throwing out the young plant afterwards. Perhaps wheat has lately been cultivated upon much land which would have yielded the poſſeſſor a better return had it been been occupied with oats. At all events, the riſk is great when wheat is extenſively ſown on thin ſoils, unleſs the after ſeaſon be very favourable.

We ſhall now proceed to detail the accounts tranſmitted to us from the different diſtricts of the iſland. From them it will appear, that the condition, and in a great meaſure the productiveneſs, of the ſeveral grain crops, depended upon the ſtage they had advanced to in the firſt week of September, when a furious northerly ſtorm damaged them ſo much as to ſtop almoſt every degree of after improvement. In the early diſtricts, chiefly thoſe of England and the ſouth-eaſt coaſt of Scotland, no material damage was ſuſtained from that ſtorm; but in others,

others, where the corn was not then ripened, the conſequences appear to have been dreadful. A ſucceſſion of frofty weather increaſed the calamity; and being followed by wet weather for an uncommon length of time, the crops of the late diſtricts were placed in a worſe condition than almoſt ever remembered. During the cold weather which kept back the late diſtricts, the crops in the early ones were, however, ſafely harveſted, and, with the exception of beans, will furniſh grain of excellent quality, though perhaps not ſo much in quantity as in more favourable years.——*October* 31*ſt.*

SCOTLAND.

Selkirkſhire Quarterly Report.

The latter part of ſummer was favourable for the growing crops, but the month of September was not ſo propitious, both corn and graſs being then either drenched with moiſture or blaſted by frofty weather. On the 6th of that month much damage was ſuſtained from an uncommonly fierce ſtorm of wind and rain, which broke down the corns, *haſhed* the potatoes, and even injured the turnip fields conſiderably. A ſevere froſt followed, which continued for a week; and ſince its departure there has rarely been a day free from rain. Harveſt work was, of courſe, greatly impeded, and a conſiderable quantity of corn ſtill remains in the field. The portion which is ſtacked is not in the beſt condition; but it was impracticable, in ſuch a ſeaſon, to get the ſheaves altogether dry. Oats in general would have been a good crop, had not the above circumſtances impeded their progreſs to maturity. Peas were entirely conſumed in many places by the black caterpillar. Turnips are ſcarcely equal to an average, and potatoes are greatly below it. Paſture graſs looks well; but live ſtock of all kinds has little demand, any ſales made being at prices conſiderably reduced. It is to be feared that matters are not yet at their worſt; and if ſo, he that runs may read the inference. ——19*th October.*

Inverneſſhire Quarterly Report.

Harvest commenced in the neighbourhood of Inverneſs about the 24th of Auguſt, and weather continued favourable for two or three weeks, ſince which it has been unſettled and variable. A great deal of corn is ſtill in the field, and preſent appearances are againſt its being ſoon brought home in a huſbandman-like condition. Inceſſant rain has poured on for two days paſt, with an uncommon heat, which threatens to make the grain ſpring immediately. In a word, the crop is light, greatly below an average, whilſt exiſting circumſtances leſſen its value in a degree not eaſily aſcertained.

The potatoe crop is materially deficient, which will be ſeverely felt over all the Highlands. On the night of September 8th, an intenſe froſt blackened the ſtalks of the plant, and ſtopped its future growth; ſince which, ſmall improvement has been made by the root. Turnips, with a few exceptions, are not one third of a decent crop; and cattle and ſheep, which through the ſummer brought low prices, may be reported as totally unſaleable. Very little of the new crop is yet ſold; but the

the dread of a ſcarcity of provender has cauſed oats to be commonly ſold upon the ground at 40s. per boll of five firlots.——22*d October.*

Banffſhire Quarterly Report.

THE weather, during the firſt three weeks of this quarter, was uncommonly mild, and proved highly favourable to the filling proceſs, where the crops had arrived at that ſtage. A great part of the oats kept long in a growing ſtate, and conſequently, received conſiderable damage by a moſt ſevere ſtorm on the 6th September. Since that time, the weather has by no means been favourable towards the ripening of grain; ſo the quality thereof will neceſſarily prove defective. Where trials have been made, the reſult ſhows they are above a fourth part ſhort of meal. A ſevere hail ſhower about the 10th September did conſiderable damage where it went along, but its effects were only partial, although ſome individuals have ſuffered deeply. Harveſting has been much interrupted by repeated falls of rain; but as theſe were ſucceeded by blowing weather, the greater part of the crop is now got ſecured without much damage. The crop turns out to be of very little bulk; generally ſpeaking, little more than half of laſt year's; and produce muſt be conſiderably below an average. Bear is of very good quality; but as the ſowing of this article has been circumſcribed, it makes but a ſmall part of the crop, which may be ſeriouſly felt when a barren year happens. Wheat is very ſound grain; but being thin upon the ground, cannot make a great return.

Although a conſiderable demand prevailed towards the end of ſummer, for cattle of the better ſort, but at prices conſiderably under laſt year's, yet there is by far too great a ſtock on hand for the provender, eſpecially as turnips have failed to a greater degree than uſual. They were only beginning to apple when the ſtorm attacked them, and, in general, have done little good ſince that time. A great ſlaughter muſt take place this winter, otherwiſe the remaining ſtock of cattle cannot be ſupported. Potatoes are not half a crop, and of ſo bad a quality in moſt inſtances, that they are ſcarcely eatable. There is no wheat ſown as yet, and very little proſpect of getting much ſown this ſeaſon. The weather is dreadful at preſent, and the ground ſo wet, that ſcarcely any animal can go upon it. The turnpike roads are now nearly finiſhed, and have gone on with greater rapidity than could have been expected in a county ſo far removed from commercial intereſt. But the commutation roads have made no progreſs; and unleſs the proprietors enter with ſpirit into the meaſure of repairing them, the country will be ſubjected to great inconvenience, many of the old roads being quite impaſſable, ſince the ſtatute labour was withdrawn from them.—23*d October.*

Letter from a Gentleman in Ayrſhire, October 23.

'THERE has not been a ſeaſon ſince the memorable 1799, to the preſent time, in which more caution was requiſite in deſcribing the ſtate of the country. Such erroneous and defective reports as we ſometimes find detailed in newſpapers, by intereſted perſons, ſeldom do good, and are often productive of miſchief. The leaſt part of the evil they do, is miſleading people's minds, by raiſing expectations which perhaps cannot

cannot be gratified, thereby rendering them diſcontented and peeviſh; but they are much oftener the occaſion of mobs and riot, and of exciting reproach and execration againſt farmers and dealers in any of the neceſſaries of life. Theſe, like every other commodity, ought to be left to find their own level, according to the quantity and the demand. If there is plenty, all the arts that avarice can deviſe, and the moſt numerous combinations, cannot make things dear. And if a ſcarcity ſhould happen, it is impoſſible they can be cheap, though the newſpapers, from one end of the kingdom to the other, ſhould proclaim plenty. The leaſt that people, who have been guilty of ſuch conduct, ought to do, is to correct their information as ſpeedily as poſſible; and not, by ſilence, as too frequently happens, endeavour to continue the deception.

'We may all remember what happened during the period above-mentioned. While next to a famine was ſtaring us in the face, the newſpapers trumpeted aloud the goodneſs and excellence of the crop, and encouraged the belief that the ſubſequent ſcarcity was occaſioned by farmers hoarding up their crop; and the ſtrong fact, of about fifteen millions ſterling being expended in the purchaſe of foreign grain, has not undeceived many to this day; and, I believe, it is alſo an undisputed fact, that ſcarce a ſingle newſmonger ever attempted to correct the miſtake, or to lower the ſanguine hopes which they had once raiſed. My opinion has uniformly been, that in all accounts of the ſtate of crops, and other neceſſaries, the reporters ought rather to err on the other ſide, which may have the good effect to make every one more frugal, attentive, and ſtudious to accommodate themſelves to their ſituation.

'I think it neceſſary to make theſe obſervations, as introductory to the very unfavourable report which I have to give you of the preſent ſtate of this county; and, for this reaſon, that the ſame thing has happened this year as formerly, viz. the moſt flattering accounts of the univerſal plenty, and excellence of the crops.

'We had at one time the proſpect of a moſt abundant crop; but the hopes and expectations of the farmer were never more completely baffled than they have been of late. The firſt ſtroke which the crop received, was from a ſevere ſtorm upon the 6th of September.—As there was at that time but very little cut down, the ſtorm generally laid it as flat as if it had been rolled; and by twiſting and warping the ſtalks into one another, occaſioned great expence and difficulty, beſides loſs, in taking it up. To this ſucceeded a pretty keen froſt, in the ſecond or third week of that month, the effects of which are not yet well aſcertained. But, what is ſtill worſe than both of theſe cauſes put together, is the almoſt perpetual rains that have taken place for rather more than a month paſt. Towards the commencement of this rainy weather, there was a conſiderable quantity of crop cut down, but not much got into the barn yard; and it is within little more than a week paſt, that any thing of conſequence has been got in at all. Where corn has been expoſed for upwards of four weeks in the ſtook, to almoſt continued rain and warmth, it is perfectly unavoidable but ſevere loſs muſt be ſuſtained;—

growing is therefore univerſal, and to ſuch a degree, that it is frequently viſible at a diſtance; and, beſides the loſs ſuſtained by growing and rot, what is ſafe is become ſo free, that the leaſt motion makes the grain ruſh off the ſheaf as if under the proceſs of thraſhing. According to the beſt information, at leaſt the full half of the crop throughout the country is yet in the fields; much of it in the ſtate above-mentioned, and, in ſome places, a good deal of it yet to cut. Take it altogether, the oldeſt people do not remember ſuch a long continued rain during the harveſt months. If good weather does not ſet ſpeedily in, the greateſt danger is, undoubtedly, to be apprehended; and even though a change ſhould happen to our utmoſt wiſhes, immenſe loſs both of corn and ſtraw muſt take place.

'What further adds to the diſtreſs is, that in conſequence probably of ſomething in the ſtate of the atmoſphere, in the earlier part of the ſeaſon, the peas and beans have almoſt univerſally failed. Even where there is ſome ſtraw, there is no fruit. Many people ſay that they will not have near the ſeed of the peas that were ſown. The potatoes, at one time, appeared to be moſt abundant; but wherever they happened to be planted on flat and low-lying ground, and, of courſe, have been for ſuch a length of time immerſed in water, they are beginning to rot to a great extent. Such are our preſent proſpects with regard to crop. There are ſome appearances to day of a change of weather; but appearances have ſo frequently, this ſeaſon, diſappointed every prognoſtication, that it is impoſſible to avoid a little anxiety.

'I am extremely ſorry that I am obliged, from regard to truth and juſtice, to add to this diſmal account of the ſtate of our crops, an equally diſmal account of the ſtate of our cattle markets. Breeders and graziers complain of a general ſtagnation, and a declenſion in price to a very conſiderable amount. There is, perhaps, no exaggeration, when this declenſion is ſtated (at leaſt) at thirty per cent. Wages of farm ſervants and mechanics are nothing abated, but rather continue on the increaſe.

'The citizen and manufacturer will ſurely this year ſympathiſe with the Weſt Country farmers. They muſt at leaſt be ſilent, if they will allow themſelves to reflect on the fatigue endured, and the loſs ſuſtained from a wet and windy harveſt; on the great riſe of rent, and price of farm labour of late, and the dearneſs of all farming implements; on the many public and parochial duties exigible from us; and, in addition to all theſe, the 10 per cent. to be levied this year, according to our rent, or ſuppoſed value of our farms. This aſſeſſment may be neceſſary in preſent circumſtances; but the *mode* of aſſeſſment is ſo intricate, nay, arbitrary, that it would puzzle the genius of the firſt accountant to determine the rule of calculation upon which the aſſeſſor proceeds. In ſhort, our ſituation, take it altogether, at the preſent moment, is not an enviable one.'

Letter from Falkirk, October 24th.

'The operations of harveſt cloſed, generally, in the Carſe diſtrict of Stirlingſhire, about the 10th inſtant, after a great deal of very unſettled and perplexing weather. During the latter part of that period particularly, we ſcarcely ever had it dry for twenty-four hours together. As the

the rains were, however, generally accompanied, or immediately followed by very high winds, little injury was ſuſtained from wetneſs. But widely different, indeed, is the ſituation of the moor lands in our neighbourhood. There, a great deal is ſtill out in a half rotten ſtate, and much yet to ſhear, which will ſcarcely be worth the expenſe of cutting down, as the weather ſtill continues exceſſively wet. Wheat is our beſt crop. It is not ſo bulky; but, in quality, ſuperior to that of laſt year; and having been got into the ſtack yard in excellent condition, and very firm, will be fully equal to a fair average. Both barley and oats are deficient; and if the circumſtances of the moor-lands, where ſcarcely any crop but oats is cultivated, are taken into the account, we may reaſonably expect this article will fall much ſhort of the ordinary ſupply; and the few trials of the new crop that have yet been made at the mill, do not promiſe by any means to make up for the deficiency in bulk, as I underſtand they are giving conſiderably leſs meal than laſt year.

'When laſt report was written, July 25th, beans were ſtated as our beſt crop in the Carſe. At that time they were remarkably luxuriant, and promiſed to be very fruitful; but a ſad change ſoon took place, which completely blaſted all our expectations with reſpect to them. They began about that time to blacken and decay; and the diſeaſe, or whatever may have been the cauſe, continued till they came to the ſickle. They are not half a crop, and of inferior quality. Potatoes are not a crop of conſideration in the Carſe, being cultivated on a ſmall ſcale, generally for mere family uſe. As far, however, as they may be noticed, they are deficient both in quantity and quality. The diminutive appearance of the ſtack-yards will, at a ſingle glance, give much reaſon to apprehend a ſcarcity of fodder; indeed, the rapid riſe in the price of hay, and the already extravagant idea of the value of ſtraw, together with the fall in the price of lean cattle, puts this almoſt beyond a doubt; although much muſt depend on the openneſs or ſeverity of the enſuing winter. The ſowing of wheat is much behind what uſually occurs in this diſtrict. What was early put into the ground has brairded well. Much, however, even on fallows, remains to be done. With our ſoil and climate, it is very uncertain if ſuch will be got ſown at all. The fields were quite overflowed two days ago; and it can ſcarcely be expected that they will be in tolerable condition again this year. In our grain-market, wheat is little in demand, and at a low price. New, of good quality, not exceeding 30s.; beſt old 36s. per boll, Linlithgow ſtandard meaſure. With other articles, however, this is not the caſe. Barley 34s. Stirlingſhire meaſure. Old beans as high as 40s.: New, far from good in quality, 35s.; the meaſure a little leſs than wheat, I believe about 5 per cent. Oat meal 1s. 8d. per peck, and expected to be ſoon higher.

'The number of cattle preſented at the laſt tryſt was uncommonly great, the moor appearing every where crowded. The ſellers ſhowed great anxiety to do buſineſs; but this was not met by a correſponding readineſs on the part of the buyers, who were more ſhy in concluding bargains than uſual. Prices conſequently declined, probably

20 per cent. below laſt year, at leaſt for lean; and even fat were cheaper. At the end of the week, many remained unſold, which, with the loſſes already ſuſtained by the dealers, the diſtance ſome of them had to travel, and the great difficulty of procuring food to hold them on, muſt prove an unprofitable, and, to many, a ruinous concern.'

Morayſhire Quarterly Report.

SINCE ſeed time commenced, the weather has, in this county, been much in extremes;—at firſt the ground was parched by drought, afterwards inundated with rain, which has occaſioned a very unequal growth, and conſequent indifferent quality both of oats and barley. Under theſe diſadvantages, two thirds at leaſt of the crop are ſecured in tolerable condition; but the remainder lies in the fields, partly uncut, and in the moſt perilous ſituation. For the laſt four days and nights it has rained inceſſantly, and the damage muſt be immenſe. It is not likely that this exporting county, if it ſupplies itſelf, will, next ſeaſon, have either barley or oats to ſpare; while in the article of wheat, perhaps three fourths of the uſual quantity, of medium quality, may go on ſhipboard; but little of this grain has been got ſown this year, and what there is, lies ſoaked amongſt water.—Farmers muſt now truſt to ſpring ſowing, with much loſs to many fields already dunged and ready for the ſeed. No price for new wheat is yet fixed, and the old is all off; neither have any new oats or barley been offered for ſale, while the old of both ſorts gives 27s. to 28s. per boll, rating the former at 5 firlots Stirling meaſure.

Cattle have continued to drop in price ſince the firſt of June, and the beſt are now almoſt unſaleable, at prices *20 per cent.* under laſt year, while inferior ſorts cannot be got off on any terms. This, with an unuſual ſcarcity of ſtraw, will occaſion a great demand for that article, and at prices far beyond its ordinary value. Two guineas per boll for barley and fodder is already talked of, and poſſibly may be ſubmitted to. Hay ſells at one ſhilling per ſtone of 20 lib. Amſterdam, and is likely to be higher. Turnips are in general a very poor crop; potatoes, a middling one, and the quality good; indeed that uſeful root ſeldom fails in this county, and the curl was never known in it.—*24th October.*

Letter from Inverneſs-ſhire.—October 24th.

'FARMING matters are in a bad ſtate here, half of the crop being ſtill in the fields; and there is no ſaying the extent of evil which may follow. Every day, for ſome time paſt, has furniſhed us with a deluge of rain, ſo that it was impracticable to execute harveſt work; and as for the potatoes, there is ſmall proſpect of getting them out of the ground; therefore it will be a hard winter for many perſons. On well managed lands, wheat appeared to be a decent crop; barley tolerably good; oats ſo and ſo; but the crops of the common farmers failed almoſt entirely, and they are buying corn and ſtraw at roups at enormous rates, ſo as their cattle may be preſerved alive through the winter months. Turnips are no better than half a crop; and as for cattle, the fall of price is ſo great, that an ox, for which 12l. would have been given laſt year, may be bought at 8l. or 9l. Juſt now barley is ſelling at 32s. p. boll; and oatmeal at 28s.'

Buchan Quarterly Report.

We had a wet, cold and late ſpring, and a very droughty ſummer. A great deal of rain fell in Auguſt; and on the 6th and 7th, and again on the 11th and 12th September, we experienced the moſt ſevere ſtorms ever remembered at that ſeaſon of the year. Indeed it was more like the end of November than the beginning of September, and would have been thought very bad at any period. The wind, rain and ſnow, beat down the corns as completely as if the weightieſt roller had been drawn over them. It was a diſtreſſing ſight; for at that time harveſt was juſt commencing, and not a ſheaf of the crop ſecured. The weather ever ſince has been rainy, ſcarcely two dry days together; yet the crop ſeems not to have received very material injury. On the whole, this quarter may be characterized as exceedingly unfriendly to every kind of rural work; and the operations of the farmer have ſeldom been carried on with greater trouble, or at more expenſe. The crop is almoſt all cut, and nearly two thirds of it got in; but, as may be ſuppoſed, rather in a damp ſtate; and, in conſequence, danger is dreaded from heating in the rick. Little wheat is ſown in this diſtrict. Bear and oats are conſiderably deficient in bulk of ſtraw, and may be ſtated at 15 *per cent.* below average; but it is apprehended the deficiency in grain will rather exceed that proportion. The lateſt oats thought not to be very productive in meal. Beans and peas a very poor crop. Turnips promiſed well; but, ſince the fatal ſtorm in September, have made little progreſs, and will be but indifferent. Potatoes deficient, both in quantity and quality. Hay a light crop. Fallows a perfect mire. There has been no ſales of new grain. Oat meal has been advancing for ſome time, and is now ſelling at 18. 4d. per peck of 8 lib. Amſterdam. Beef 2½d. to 5d.; Mutton 4d. to 6d. per pound of 16 oz. Amſterdam. Hay from 9d. to 1s. per ſtone of 20 lib. Amſterdam. Rather an overſtock of lean cattle; and no demand. Land rent is ſtill advancing;—ſo is ſervants' wages;—the rates for dyking, ditching, &c.; and, in fact, every article the farmer has occaſion for. The weather continues to be bad; the ſtooks are completely ſoaked, and in a moſt deplorable condition.——*Oct.* 24.

Roſſſhire Quarterly Report.

So unfavourable a ſeaſon as this one has not occurred to farmers in the north of Scotland, for many years. The crops of corn are generally light,—cannot be expected to meal well,—and one half of them ſtill in the fields, with the proſpect of receiving conſiderable damage; ſo a great deficiency may be looked for in this county. Potatoes, the principal article of the food of the poor, are likewiſe a ſhort crop; and the wetneſs of the ſeaſon has injured their quality.

To add to theſe miſeries, cattle have decreaſed in value to a moſt ſerious extent. In laſt report it was ſtated, that a fall in price, of 20 *per cent.*, had taken place; and, at the Beauly market on the 21ſt and 22d current, there was a further fall of 20 *per cent.* So that lean cattle are now very low indeed.

Harveſt did not commence in this county till the beginning of September; and, on the ſecond week of that month, the moſt ſevere weather ſet in

ever recollected at that period of the ſeaſon. We had two weeks of exceſſive cold, boiſterous weather. Many of the hills were as white as they will be at Chriſtmas; and a great proportion of the crop being then unripe, it may readily be ſuppoſed that the filling proceſs would be much retarded. For the two laſt weeks, almoſt nothing could be done to ſave the crop. The weather has been perpetually moiſt, and, for ſeveral days, there has been inceſſant rains, which being now followed by heat, cannot fail to produce ſprouting. No price has been yet ſpoke of for new corn, excepting barley, for which 30s. per boll have been given. Turnips are not more than half a crop. In fact, every thing is greatly behind an average; and nothing but a high price, for what the farmer has to ſell, can indemnify him for the loſſes of this year.—*Oct.* 25.

Weſt Stirlingſhire Quarterly Report.

The weather, for a ſeries of months, has been ſingularly unpropitious to the farmer. A ſeaſon ſo long precarious, and ſo uniformly unfavourable, is not remembered for many years. Rains have prevailed, with few and ſlight interruptions, always accompanied with high floods, which overflowed the low grounds lying on the banks of rivers; and frequently with thunder, which, in the higher diſtrict, has been fatal to cattle—and, on ſome occaſions, to man. In the beginning of September we had a week of ſevere froſt, which prematurely whitened every ſpecies of corn, and entirely deſtroyed the ſtems of potatoes. A month of mild weather, and inceſſant rain, afterwards enſued; and now, though the ſummits of the Grampians are covered with a ſnowy mantle, —though ſhowers of hail often deſcend into the plains,—and though froſts occur in the morning, the ſeaſon has not ſettled; and a day fair from morning to night is rarely to be found.

The harveſt was partially begun in the laſt week of Auguſt. Wheats, from being early and long laid with rain, were beginning to germinate in the ear, before they could be raiſed by the ſickle. As there were ſometimes two fair days in ſucceſſion at that time, this grain was harveſted in good order, and proves, in general, not below the average. Beans have generally failed. Even the beſt fields were found to have the pods flaccid, and the beans ſhrivelled. In the higher diſtrict, harveſt was not generally begun till the middle of September: ſtill there are many fields of corn to be cut down, and theſe are very far from being ripe. Notwithſtanding the utmoſt exertions, not one half of the crop has been harveſted there; and that which is left on the field, muſt probably be loſt, if the weather do not ſpeedily improve.

Markets of grain are evidently threatening to be high. Few farmers have had time to thraſh and grind any of their crop; and ſtill fewer are willing to diſpoſe, at preſent, of the produce. Meal is ſcantily retailed at 22d. per peck, and is expected to riſe immediately to 2s. Cattle of all kinds are greatly depreſſed in price. At the late markets, no rent was given for their paſturage during ſummer; and often they were ſold ten *per cent.* cheaper than when bought in ſpring.——26. *Oct.*

Wigtonſhire Quarterly Report.

The promiſing appearances of an abundant crop, which this diſtrict pretty

pretty generally exhibited at the date of laſt report, have been very partially realized.

Few harveſts remembered have been more unfortunate in weather; for heavy and repeated rains have prevailed throughout. Little corn was cut down until Auguſt had paſſed; and the whole intereſting month of September ſcarcely afforded fifteen working days without ſerious interruption.

The winds and rains had chiefly come from the ſouthward, and the grain, therefore, was inclined or lodged in the ſame direction; but, on the 5th and 6th of September, it blew a violent and conſtant gale from the northward, accompanied by a heavy rain, which, of courſe, toſſed and damaged the growing corn in the moſt diſaſtrous manner, occaſioning very ſerious loſs in the process of reaping, independent of ſhake in expoſed ſituations.

Some were fortunate enough to accompliſh the buſineſs without much further loſs; but by far the greater number have ſuffered ſeverely, in ſpite of the moſt active perſeverance; and, at this very moment, the grain is not *every where* cut down. Many fields repreſent the melancholy reality of an entire crop periſhing in the ſtooks, without the farmer being able, by any means, to prevent the ſad calamity.

It is not yet aſcertained how far theſe evils have extended; but the accounts are almoſt equally bad from the north of Ireland, the north of England,—and the weſt, as well as the ſouth, of Scotland.

The weather has been more favourable for a few days, and things are going on as faſt as poſſible; but there has been an unuſual ſcarcity of hands, and a conſequent advance of wages, proceeding, in a great meaſure, from the militia ballot having frightened off our Iriſh aſſiſtants.

The bear crop is almoſt, if not entirely and univerſally good for nothing. This misfortune is generally believed to have been produced by lightning in the end of ſummer, and is aſſerted to extend as far as Carliſle and Glaſgow. How much further, is not yet known here.

To render our ſituation the more diſtreſſing, a grievous depreſſion has taken place in the cattle market. The extravagant rents of graſs land muſt be paid for nothing, and the breeder muſt ſuffer in his turn. Hopeful times! A few ſuch years in ſucceſſion, and the gilded bubbles of ſpeculation will aſſuredly burſt.

But this diſtrict muſt now be reported cautiouſly, otherwiſe the wiſe and good men, who, with ſo much credit to themſelves, direct and arrange the affairs of a certain reſpectable ſociety, would not fail to lift up their teſtimony againſt the reporter, and might even urge the neceſſity of a *ſpecial meeting*, in order to procure from the worthy members, an unanimous expreſſion of the higheſt indignation.——*October* 26.

Mid-Lothian Quarterly Report.

The commencement of harveſt was more early, but its termination threatens to prove fully as late as was previouſly expected. Conſiderable quantities of oats ſtill remain in the fields, and indeed ſome are yet to cut in the upland diſtrict of the county, for which, from the late con-

tinued rains, and advanced period of the ſeaſon, a propitious ingathering can hardly be expected.

On the evening of the 5th of September, commenced a torrent of rain from north-eaſt, with a high wind, which poured inceſſantly all night, and the whole of next day:—As ſoon as day-light appeared, it was foreſeen that the haughs along the Almond would be overflown:—All hands were therefore ſummoned. Men and horſes with carts were volunteered by the neighbourhood, to aſſiſt in removing the reaped grain out of the water's reach, which was only effected with a partial ſucceſs. From the drenched ſtate and weight of the grain, conjoined to the wetneſs of the ſoil, the cart wheels and feet of the horſes ſunk ſo deep into the ground, that the loads of courſe were from neceſſity trivial, and progreſs ſlow. This, in the midſt of a terrible deluge, and increaſing height of water, became too much for animal ſtrength; therefore men and horſes were exhauſted, and obliged to deſiſt from ſo oppreſſive a conflict with the elements. Whole fields of reaped grain were ſweeped away, and depoſited on the grounds of others; nay, even ſome dunghills ſhared the ſame fate. Such an inundation has not occurred during harveſt within the memory of any people living, nor indeed in any period of the ſeaſon ſince the memorable 17th of November 1795, which did ſo much miſchief over all Scotland.

Fortunately ſome of the ſucceeding days furniſhed ſmart dry weather, which allowed the waters to abate, and exhibited a ſcene of great confuſion. Many fields of grain belonging to different individuals, and of different ſpecies, were found depoſited in cumulo upon the fields of neutral perſons, a portion of them being carried to the ſea. It became no eaſy matter for each claimant to identify his own; and it is ſaid that, *on this account*, amidſt the general wreck, ſome were rather gainers.

In ſuch a ſituation, the difficulty of ſelection, of conveying home, of ſpreading and drying, was a taſk of the moſt arduous kind. Thoſe fields that were uncut, were levelled to the ground amidſt the ſand and mud left by the flood. From this cauſe, ſome of it that has been thraſhed, throws off ſuch a quantity of duſt, as almoſt to blind and ſuffocate the people employed in the operation; and, to a perſon at a diſtance, exhibits the appearance of a homeſtead going to riſe into flames.

Luckily, although this calamity falls heavy upon individuals, yet its extent is not ſo great as to affect the public ſo materially, as perhaps the immediate ſucceeding hoar froſts have done in the upland parts of the county.

On the 8th and 10th of September, at ſun-riſing, the thermometer ſtood at 35, and on the 17th and 18th, at 33, in an altitude conſiderably below the medium of that part of the county under aration: the degree of cold and froſt may therefore be conjectured in ſituations ſome hundreds of feet higher; there, ice made its appearance, of conſiderable thickneſs. In thoſe ſituations where the ground was flat and low, with the ſoil of a ſoft texture, the grain froſted, and was rendered unfit either for the mill or for ſeed: on ſoils of a more hard and compact nature, although fully as high, froſt has not had a ſimilar effect; but the grain never

never did much good after the miſchievous 6th of September, where not previouſly filled. From trials that have been made in thoſe ſituations which, in ordinary ſeaſons, uſually produced 12 and 13 pecks, and in favourable years 14 pecks, this ſeaſon only give from 6 to 8 pecks per boll; and this obſervation is ſtill more applicable to many other counties than that of Mid-Lothian. In ſhort, ſuch a ſeaſon has not occurred, with the exception of the years 1782 and 1799, for all high climates. Very different is it with the low diſtrict of the county; for although the harveſt proved tedious and irkſome, ariſing from the frequent interruptions by wet weather, yet theſe were uſually ſucceeded by fine blowing weather, which counteracted the baneful effects of the rain: there has been no loſs by ſhaking, no ſpringing, nor any neceſſity for unlooſing the grain to dry:—hence the crop is well got.

The ſtack yards, however, are ſmall, and thought to be from one-fourth to one-third deficient in bulk, but are expected to give well. Wheat may be rated at rather more than a medium crop; oats and barley at ſomething leſs; beans and peas greatly below an average.

The potatoe crop is by no means productive; in ſome inſtances the root is ſpoilt in the ground; while all of them eat ſoft and waxy, and a large portion are ſtill to raiſe. Wheat ſowing, although well advanced, is not near completed. There are yet one-third, or perhaps two-fifths to make up and ſow, which, from the preſent aſpect of the weather, will not be accompliſhed in a hurry. ——*October* 26.

Dumfrieſſhire Quarterly Report.

The weather for the laſt three months has been variable, and produced both good and evil to the farmer. In the beginning of Auguſt, there was an appearance of a plentiful return from all the corn crops cultivated; the weather through that month being ſuch as raiſed a general expectation that the corns would be well filled, and the harveſt early. Accordingly, wheat and barley, which had been advantageouſly and early ſown, were cut down in good condition in the laſt week of Auguſt and firſt week of September, and were ſecured almoſt wholly, by the 12th of that month. Potato oats, and other oats of the early kinds, were alſo cut down generally, in low and dry grounds, in Auguſt and firſt week of September: theſe were harveſted without injury. But crops of all kinds which were not ready by the 5th September, ſuſtained conſiderable loſs. The remarkable ſtorm of wind and rain on the night of the 5th, and on the 6th, broke down a great deal of the ripe corn, particularly that expoſed to the north-eaſt. And a conſiderable quantity was ſhaken from that which was ripe or nearly ſo. Wheat in this ſtate ſuffered moſt.

The general froſts which ſucceeded and continued for four or five days after the 12th of September, added greatly to the injury done by the ſtorm, particularly to oats which were not ripe, and to potatoes. But it has ſince been remarked, that theſe froſts did much more injury to green corns on the low grounds, than on higher expoſed ſituations. And this appears to hold as to potatoes as well as to corns.

The weighty rains and general moiſture in the air, which continued

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to the end of September, and through moſt of October, have occaſioned conſiderable loſs to the crops, not only in high ſituations, but alſo to ſeveral of thoſe which were in better ſoils and climates, eſpecially where the day or hour for ſaving them was loſt, by neglect or otherwiſe. The effects of the weather afford at this day an unpleaſant proſpect, not only in the high grounds, but alſo in the other ſituations comparatively low, where moſs and cold clay predominate.

In this county, the crops generally, as before obſerved, would have been in all appearance abundant, had it not been for the ſtorms and froſts; but thoſe which ſuffered or were afterwards expoſed to the effects of the rains, muſt prove ſhort and bad in quality. Judging of the whole from the circumſtances mentioned, it is believed that the crop of wheat may juſtly be called good, and that both it and barley are equal to an average. The oats, however, are far from being ſo, though generally, in the low dry grounds, they will prove good. Yet, ſo great a proportion of this article is raiſed on high grounds and cold ſoils, that, on the whole, there muſt be a conſiderable ſhortcoming.

The crop of peas has been loſt by a ſmall green worm that affected them when the pod was beginning to form. Moſt of the fields were mown for fodder. Peas are not very generally cultivated here; thoſe that are raiſed are by the middle claſs of farmers; and the loſs will be felt where they were neglected to be mown down in proper time.

Of all the injuries ſuſtained in the courſe of the ſeaſon, nothing appears ſo conſpicuous as that of the potatoes: thoſe of the early kind, and of all kinds which were planted early, are held to be a middling crop; but thoſe which were planted about the end of April, or within the month of May, were neither arrived at their natural growth nor conſiſtence when the froſts came on; and thoſe in low or hollow ſituations, do not appear to have improved ſince then in either reſpect. The injury thus done to farmers of the lower rank will be very extenſive, becauſe much money has been brought to them by the feeding of ſwine; and it muſt alſo affect conſiderably the expenſe of living of the labouring people. If other counties are affected in the ſame manner, it will no doubt increaſe the demand for oat meal.

The times have afforded a ſort of regular demand for cattle and ſheep; but the prices have conſtantly been on the decline; and though they cannot be called low, ſpeaking of the average prices for the ſpace of an ordinary leaſe, yet, the ſales of the preſent year appear to be much againſt the farmer and dealer. The prices, however, of aged ſtock, in condition, ſeem ſtill to be good; and it is only lean and young cattle, which appear to be over numerous, that are moſt fallen in price. The ſame may be ſaid of ſheep.

The turnip crop ſuffered early in the ſeaſon by the fly and the drought, which kept them far back; and they are neither regular nor of an ordinary ſize. The preſent weather, however, keeps them growing, but there is little or no proſpect of their being a full crop.

A few of the hiring markets have yet been held. In theſe the wages

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are lower, both of men and women, generally about 20 *per cent.* under laſt year.—— 27*th October.*

Forfarſhire Quarterly Report.

A SEVERE hurricane of wind and rain on the 6th September, did much damage to the crops in general; and in particular, with the froſts which followed, prevented ſuch corns as were late, from filling much afterwards. The preceding harveſt has been rather tedious; and yet, the injury ſuſtained by wet weather cannot be ſaid to be great. Reaping became general about the firſt week of September, and was finiſhed about the beginning of October. As predicted in laſt Report, the preſent crop is a ſcanty one, and the proſpects of the huſbandman at this time, rather unfavourable.

Wheat is ſomething like an average crop, but the late ſown of that grain is indifferent in quality. Barley is univerſally light, except a few fields that were early ſown, and on thin ſoils is alſo deficient in quality. Oats are worſt of all, and when made into meal, are found defective, at leaſt two pecks of meal per boll leſs than laſt year;—the late varieties ripened very unequally. Potatoes are alſo but a middling crop. Turnips received a ſevere check about the beginning of September, but now ſeem to have a growing appearance; in many inſtances they are thin on the ground, and cannot be reckoned equal to an average. From the ſmallneſs of the ſtack yards, it may eaſily be inferred, that provender will be much in requeſt. The practice of cutting corn by the threave ſeems to be gaining general approbation in this county; and in another year, it is ſuppoſed the greater part of the crop will be cut down in that way;—the price commonly given is 4½d. or 5d. per threave for wheat, and 3d. or 3½d. for oats and barley. Some farmers bind and ſet it for the threavers, others do not. On an extenſive tillage farm, it was found, that the expenſe of cutting was juſt 1 1s. per acre for the whole crop, and a conſiderable proportion was wheat. The advantages of the ſyſtem are, that perſons of all ages, and thoſe who can but occaſionally work, turn out to the harveſt, and a greater ſupply of hands is conſequently got; that the intereſt of the reaper and the farmer being combined in cutting the corn low, a ſhort and clean ſtubble is obtained; and that the trouble of victualling a large number of people is ſuperſeded.

The prices of cattle are very much reduced, and the grazing buſineſs has proved ruinous to ſeverals whoſe capitals were ſlender. It has indeed been hardly poſſible to make any graſs rents, as the prices fell every market; and, from the quantity of young ſtock in the country, it can ſcarcely be looked for that a riſe will ſoon take place.

A great breadth of ground has been ſown with wheat this ſeaſon, and generally the ſeed has been ſafely depoſited, although it may be remarked, that many farmers ſeem more anxious to get a large quantity ſown, than to get the ground in a proper ſtate for carrying a decent crop.——27*th October.*

Perthſhire Quarterly Report.

THE harveſt, even at this advanced ſeaſon, is not over in Perthſhire; a conſiderable quantity both of oats and barley being ſtill in the field, and many

many patches are to be ſeen uncut, in ſome quarters of the county. This is partly owing to the backward ſummer, and partly to the rainy autumn. No kind of grain crop is expected to come up to an average one, excepting wheat, and, even of that, much was lodged. It is, however, bulky, and conſidered by ſome people as exceeding an average.

Barley is a light crop, much of it unequally ripened, and no inconſiderable part injured by the froſts in the beginning of September; ſo that, in general, it will not malt well. Early oats were too far advanced before the rain came in Auguſt, to be much benefited by it; of courſe, they are likewiſe a light crop. On the other hand, ſuch as were late, were ſo affected by the early froſts, that, in ſeveral diſtricts, the yield of the mill is unuſually ſmall: ſo that, on the whole, this ſpecies of crop will be very deficient. After the ſummer rains, the Haſtings pea failed everywhere; but ſome fields of grey peas on rich land, were very fine. Beans are a poor crop: even ſuch as continued to vegetate after the froſts, are imperfectly podded. But the effects of the intenſe cold of the ſixth and four ſucceeding nights of September, were more perceptible on the potatoe crop, than on any other. Over all the low-lying part of the county a complete check was given to its further progreſs. Wherever the crop was late, it is not worth the expenſe of taking out of the ground; and on an average over Perthſhire, it will not amount to half a crop, in bulk, and the quality is generally uncommonly bad; from which circumſtance, together with the wet ſtate in which that crop muſt be taken up, a good deal of attention will be found neceſſary to preſerve it through the winter. The baneful effects of theſe froſty nights have, in a greater or leſs degree, been felt over all Perthſhire; but low-lying places were moſt injured; and, what is unaccountable, in ſome other counties, the potatoe, which is the moſt delicate of all crops, was not at all, or, at moſt, only very ſlightly affected.

Wheat ſowing has been much retarded by the late rainy weather. A conſiderable breadth of clover and bean ſtubbles are either unſown, or ſown in bad condition: and in the ſouth-weſtern ſide of the county, many farmers have not got in the ſeed even on their ſummer fallows.

It is ſaid, that, in other places, the price of cattle has fallen from 15 to 20 *per cent.* within theſe eighteen months. But in this county from 40 to 50 *per cent.* is nearer the truth.——*27th October.*

Berwickſhire Quarterly Report.

The weather has been variable and ſhowery throughout the whole of this quarter. Early in Auguſt, the crops were much lodged by thunder ſhowers, particularly luxuriant wheats, which, from that time, became infected with mildew. Harveſt commenced about the 26th of Auguſt, and went on pretty ſmoothly till the 6th of September, when we had a tremendous gale from N. N. E., attended with heavy rain, which continued with little intermiſſion for more than twenty-four hours, and occaſioned the higheſt floods that have taken place for ſome years. On the low river-ſide grounds, a good deal of cut corn was ſwept away, and the uncut greatly damaged. But, when the wide extended devaſtation which ſuch a gale muſt have produced amongſt the ſtanding corn at that criti-

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cal period, had it been unaccompanied by rain, is duly conſidered, theſe partial loſſes, rather aſſume the aſpect of a favourable compromiſe. Fortunately, at that time, a tract of very cold weather ſet in, which prevented the cut corn from ſprouting, and, though not altogether free of ſhowers, afforded frequent opportunities for in-gathering. The crops in the low diſtrict were moſtly ſecured by the middle of October, without having ſuſtained material injury, though the weather had been ſoft and ſhowery from the beginning of the month; but, in the Lammermuir diſtrict of the county, there is a good deal of corn yet to carry, for which the weather has, of late, been very unfavourable. The current wage of reapers engaged for the whole harveſt was 2s. 10d. per day for men, and 2s. 6d. for women, with victuals.

Wheat may be reckoned to yield an average return; but the quality on ſoft ſoils, in conſequence of mildew and early lodging, is very indifferent. Oats are a light crop, and do not meal well. Barley is a good middling crop, but, from the ſmall quantity now raiſed, very little will find its way to market. Peas having fallen into a decline before harveſt, are poor both in corn and ſtraw; and beans are conſiderably ſhort of an average; ſo that, upon the whole, our crop, taken in the aggregate, will prove rather below par.

The ſeaſon has been unfavourable for the preparation of wheat fallows, many of which are not ſo clean as could be wiſhed; and, from the unſettled ſtate of the weather, a good deal of wheat land ſtill remains to be ſown.

Stock of all kinds has experienced a conſiderable depreſſion; caſt ewes have been ſelling about 20 *per cent.* lower than laſt year; Cheviot ewes not quite ſo much, owing, perhaps, to the great demand from the Highlands for breeders of that variety. No demand from Yorkſhire for Dinmonts. Lean cattle hardly ſaleable; fat, about 6s. and 6s. 6d. per ſtone of 14 lib. ſink.

Turnips have made ſmall progreſs ſince the ſtorm in the beginning of September, and can be eſtimated, upon the whole, as little better than two thirds of a crop; ſo that, from the quantity of ſtock in the country, they are likely to be in conſiderable demand. Young clovers are generally thriving; but potatoes, though luxuriant, do not riſe to their appearance.

Prices at Berwick, October 24th;—Wheat, from 32s. to 40s.; Barley, from 30s. to 32s.; and Oats, from 20s. to 22s. per boll of ſix Wincheſter buſhels.——*October* 28.

Letter from Glaſgow, October 28.

'In this part of the country the weather has been peculiarly unfavourable for harveſt work; and, excepting a ſhort time at the beginning, in which fortunately the principal part of the wheat was ſecured, we have experienced almoſt continual rain. What could not be ſtacked at this propitious period was, in conſequence, greatly injured. In the fields there is ſtill a conſiderable portion of bear and oats, which exhibit to the beholder a truly bleak and gloomy ſpectacle. The ſtooks ſeem completely drenched with the ſuperabundance of moiſture which has fallen, and in the moors, thoſe parts which are always late, we are of opinion, that, unleſs

unleſs a ſpeedy change in the weather take place for the better, the farmers will loſe almoſt entirely the produce of their lands. Potatoes, too, have been much affected by the long tract of wet weather; few now can be found of good quality; they are alſo deficient in quantity. To the weather, likewiſe, we muſt aſcribe the very conſiderable riſe in the prices of barley, beans and oats. Wheat alone continues dull in ſale, and rather looking down. We ſhould think, however, that this ſpecies alſo muſt ſhortly quicken, eſpecially if the preſent high prices of other ſorts of grain be long maintained.

'Our ſtock of grain, at preſent, conſiſts principally of wheat, of which we have a large quantity; of the other ſorts we have but little. On account of the rain, very little progreſs has been made in the wheat ſeed; and, unleſs more favourable weather immediately ſet in, but a ſmall quantity will be ſown in our neighbourhood this ſeaſon.'

Aberdeenſhire Quarterly Report.

It was ſtated in laſt Report, that the weather, which had been cold and backward during the ſeed time and ſubſequent period, was then altered much to the better. The fine weather continued without interruption until the 1ſt of September. Crops of every kind came forward with great rapidity, and amended in an aſtoniſhing manner. Some early fields of bear were cut, and general harveſt ſeemed ready to commence. At this time, however, the weather changed for the worſe; and ſtorms of wind and rain, froſt and hail, ſucceeded each other. The operations in the fields were much interrupted, and the crop, which before was ſo promiſing, now put on a very different appearance. On the 6th and 7th of September, there was an extraordinary ſtorm of wind and rain; and, on the night between the 10th and 11th of the ſame month, there was a tremendous thunder ſtorm, accompanied with ſhowers of hail; one of which, in particular, traverſed the country in a ſoutherly direction, inclining a little to the eaſt, from the ſea, about three miles weſt of Banff, till it paſſed the river Dee about ten or twelve miles weſt of Aberdeen, extending about half a mile in breadth, and demoliſhing every thing in its courſe, whether oats, bear, graſs or turnips. Beſides this, different hail ſhowers paſſed over ſeveral other places, ſhaking the crop ſeverely wherever they went. So much for the beginning of harveſt. Since then, we have had frequently heavy falls of rain accompanied with high winds; and while the reaping was very much retarded by the one, the other enabled the farmers to get into the ſtack-yard ſuch corns as were ready. At preſent a large proportion of the oats remain in the field, in very bad order, having been thoroughly drenched with rain, from an uncommon fall on Wedneſday, Thurſday and Friday laſt, by which the burns were ſo much raiſed as to bring down and demoliſh ſeveral bridges in the country, and carry off part of the corn remaining on the haughs.

From the above ſtatement of the harveſt weather, no very ſanguine expectations can be formed of the crop; it is neceſſary, however, to obſerve, that the bear crop furniſhes very fine grain, and well got in on the whole, although not widely ſown; and that, as the weather was

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ſo long good before harveſt, great part of the oats were well filled, and turned out far better in the ſtook than they promiſed before reaping. The froſt was partial, and did not extend its ravages very widely; the principal injury is from the hail, ſhaking, and the exceſſive rains, which prevented the whole from coming to maturity, and damaged part of it after being cut down. Theſe things muſt be felt on a crop not at firſt fully equal to an average one.

Graſs has been ſcanty throughout the ſeaſon, particularly ſo ſince the 6th of September; and cattle have been prevented from coming forward in the ordinary manner, from the inclemency of the weather. Cattle in good order have maintained fair prices; the ſmall ones and lean ſtock very low, and ſcarcely marketable.

Neither potatoes nor turnip are good crops, both having been ſeverely checked early in the ſeaſon. ——*28th Oct.*

Upper Annandale Quarterly Report.

The ſeaſon of harveſt has been very unfavourable. The rains of the latter end of July introduced a long tract of wet weather, moſt injurious to meadow hay, and to all ſorts of grain. The loſs and expenſe are very conſiderable; and even the green crops have been materially injured; firſt by the hurricane of 6th September, which laid or broke down every ſpecies of white and green crop; and afterwards by the froſts of different nights, eſpecially that of the 8th September, which was followed by clear ſunſhine, and blackened the ſtems of potatoes completely. The peas are totally loſt here, in conſequence of the ravages of *aphides*; a few latter bloſſoms appeared after theſe green inſects had periſhed; but theſe were too late to introduce any fruit. Some fields in high ſituations eſcaped, becauſe the bloſſoms did not appear till theſe deſtroyers were gone.

Oats are injured in every way, by laying, ſhaking, or growing; and the ſtraw is very much damaged. The early ſtacked grain is the only part of this crop that ought to be truſted to for ſeed; and much of the oat-meal will be affected by the injuries done to the grain. Had the autumn been good, a full average crop of oats had been obtained; but, as matters ſtand, there muſt be a conſiderable deficiency. *Barley* has been grown on a ſmall ſcale; and what there is, cannot be much recommended. *Wheat* has ſuffered from the ſame cauſes, and is very indifferent in this country. *Potatoes*, in general, appear to be deficient of growth and quality both. *Sown Hay* was light on the ground; but it was the only crop that was finely made and ſtacked. *Turnips* have not failed ſo generally here, as they are reported to have done in other counties; but many of their leaves were broken, and became white by the hurricane of 6th September; and the harveſt has been too moiſt for this crop to be either clean or vigorous.

Prices of Oat-meal 3s. per ſtone; Potatoes 2s. per Moffat peck, which is from ſix to ſeven ſtone avoirdupois weight; Hay, out of the ſummer rick, 1s. to 1s. 2d. per ſtone, and 24 lib. avoirdupois; Barley 4s. and upwards per Wincheſter buſhel. The prices of ſheep and cattle depend on their condition; fat ſells, in retail, at 6d. per lib. avoirdupois; but lean

lean ſtock can hardly be ſold at any price. Draught black-faced ewes have been bought at 7s. each, and two ewes to the ſcore; and the ſtirks that ſold at 4l. about Whitſunday, can hardly bring 3l. at the preſent time. Store-farms are in a ſtate of extreme depreſſion at preſent; and they muſt be wealthy farmers that can bear it long, if matters do not improve in their favour; but moſt of this claſs of men, by long tracts of good years and ready markets, are in eaſy circumſtances.

Servants' wages fell very conſiderably at Moffat hiring fair; but theſe were houſehold ſervants. The wages of day-labourers have not yet altered much from their uſual rates, which for ſome time have been generally at 2s. per day; but for mowing hay 2s. 6d. with victuals; and for ſhearing, four weeks only, men obtained near 3l. each with victuals. From theſe rates, the expenſe of ſuch a tedious harveſt, not yet fully home, may be readily conceived.——30*th October.*

Fifeſhire Quarterly Report.

DURING the preceding quarter, the weather was generally variable; much rain fell, with intervals of cold froſty winds in September. Harveſt became general in the beginning of that month; and ſo unequally did the victual ripen, that in ſome parts of the county, on low as well as high land, cutting was only concluded lately. Much victual is ſtill to bring in; but the heavy rains being alternately followed with drying winds, little damage is ſuſtained by the cut corns. The oat crop is not only very thin; but the longer it ſtood, it looked to be leſs ripe, by a ſecond, and even a third growth, ſpringing up and overſhading the firſt; and it muſt be found unproductive. This grain is ſuppoſed to be about one fifth inferior to laſt year; therefore far below an average crop. Peas and beans have failed to a greater extent, moſt of them being deſtroyed by the caterpillar; and where not attacked in this way, the froſt winds prevented them from filling; ſo that a total failure is the conſequence. Barley ſuffered alſo from unequal ripening, but to a leſs extent than oats; the quality is not equal to laſt year, and ſuppoſed below an average.

Wheat is reckoned equal to an average crop, and the quality good. Flax was hurt by the rains, and only a middling crop. Potatoes, which in July promiſed to be moſt abundant, have, in conſequence of the rains and froſt winds, ſuffered exceedingly, and are found to be very deficient in quantity, whilſt the quality is bad and watery. Turnips on dry ground are fine; on wettiſh land not worth any thing. Straw is ſcarce, which has raiſed the price of hay from 1s. to 1s. 6d. per ſtone, and reduced the price of horſes and lean ſtock 25 per cent. Oats in the ſtraw, or corn and fodder, has ſold by roup as high as 36s. per boll, and in ſome caſes at 40s.

The grazier has had a bad buſineſs this year. Loaded with graſs rents enormouſly high, he cannot, at this moment, get but a trifle more for his cattle than he paid in the ſpring; in ſome inſtances the whole rent of the graſs is loſt; and where the cattle are not good fat, even the ſpring prices cannot now be got.

Victual of all kinds being wholeſome, it is not apprehended that a ſcarcity

ſcarcity will enſue, although ſome riſe of prices may be expected, eſpecially on oat-meal. Clover and young wheat have a promiſing appearance, but the wetneſs has prevented much wheat from being ſown. ——30*th October.*

Dumbartonſhire Quarterly Report.

ANOTHER wet harveſt has occurred, to the great loſs of this and other counties. The rains began about the middle of July, and have continued, with little or no intermiſſion, till the preſent time; conſequently, an account of occurrences is juſt a catalogue of misfortunes. All kinds of grain are of a very inferior quality, and the late crops are not ripened at all. The potatoes are in many places rotted by the rains; even where this has not happened, the quality is very inferior, and the quantity ſhort of an average by one half. Much loſs was alſo ſuſtained by the growing of the crop in the ſtook. In ſhort, things are as bad as a three months rain might be ſuppoſed to occaſion; and the retroſpect is ſo painful, that I haſten to finiſh the account. Since the 22d we have had fine dry weather, which may ſave the remnant of the crop in good order.

The groſs injuſtice of taxing Scots bear as high as Engliſh barley, never was more ſtrongly exemplified than it has been this ſeaſon. The barley harveſt of England was finiſhed by the end of Auguſt, except in ſome parts of the northern counties, with little or no rain. In this country, no bear was cut till after the middle of September, when it had ſuffered two months of conſtant wetneſs; much of it was not cut till lately; and at this time, there is ſome in the diſtrict ſtanding uncut. The relative quality of the produce of the two countries, may therefore be eaſily gueſſed at, eſpecially when it is conſidered, that ſince the beginning of Auguſt we have had very little ſunſhine. It is much to be wiſhed, that the reſtoration of the old rule; or ſome other adequate remedy, were applied to this evil; for it cannot be denied, that in this ſoil and climate, bear is the only crop under which the ground can be ſuitably prepared and laid down to graſs with beſt advantage. It would have been becoming the landed intereſt; not to have allowed the rule of taxation which had received the ſanction of a century of practice; to be ſwept away without oppoſition. As the matter ſtands, every nerve ſhould be exerted by them, to have it reſtored; for their intereſt is permanently involved in it, while that of the tenantry is comparatively tranſient.——31*ſt October.*

Eaſt Lothian Quarterly Report.

HARVEST was a teazing and expenſive buſineſs, though, with a few exceptions, the ſeveral crops were ſecured in due time, and in good condition. Wheat and Barley may be equal to the uſual averages; but Oats, Beans and Peas, are below that ſtandard. The two laſt articles are unuſually deficient, both with reſpect to fodder and grain; and, owing to this deficiency, the price of hay has, of late, rapidly advanced.

A dreadful ſtorm of wind and rain viſited this diſtrict on the 6th of September, and occaſioned, not only much injury to the crops which were then uncut, but alſo a ſerious loſs to farmers on the Tyne and other waters. The preceding morning was ſoft and mild; in the after-

noon the wind ſhifted to the ſouth-eaſt, accompanied with a gentle rain of little conſequence; and in this ſtate the weather remained till about eight o'clock in the evening, when the wind ſuddenly ſhifted to the north-eaſt, and blowed with all the fierceneſs of a Weſt Indian hurricane till next day about two in the afternoon, when it partially abated. As two thirds of the crop were then to cut, the loſs from ſhaking would have been incalculable, had not a heavy rain poured on all the time, which beat the crops to the ground, and ſoaked the grain ſo completely, that little or none dropped out. The greateſt loſs was afterward, the corns being ſo twiſted and broke, that any thing like perfect cutting was an impracticable meaſure. Moderately ſpeaking, two additional ſhearers per acre were required to do the like extent of work after the ſtorm as before it. In ſhort, ſuch an autumnal ſtorm never happened in Scotland before; though, as cold hard winds followed, the corn in ſtooks was fit for carrying a few days afterwards.

One bad conſequence of the ſtorm was a general failure of paſture graſs, partly ariſing from the drenching which the ground had received, and partly from the froſty weather which immediately followed. Aftermaths, or clover foggage, alſo were thereby ſtopped in their growth; and apprehenſions were at one time entertained concerning the turnip crop, which fortunately are not realized. Of this valuable eſculent, fewer have been cultivated this year than uſual, though, where ſteady management was exerciſed, the crop is not a bad one. Potatoes have failed in many inſtances; and, being generally houſed in a wet ſtate, there is cauſe to dread that they will not be preſerved in perfection through the winter months.

The ſowing of wheat is tolerably well advanced; and, though much improper weather for executing that important branch of huſbandry occurred, yet, with thoſe who ſtudied to catch opportunity as it appeared, the work has been executed in a huſbandman-like manner. Perhaps one fourth of the wheat land remains to be ſeeded, eſpecially upon the coaſtſide lands, where farmers ſeldom wiſh to ſow ſo early as their brethren do in the internal parts of the diſtrict. A conſiderable quantity of ſpring wheat is annually ſown where turnips are much cultivated.

The wheat market has been uniformly dull for ſeveral months, and at Haddington, it has not been cleared ſince the commencement of harveſt. Thraſhing machines neceſſarily occaſion a large quantity of this grain to be poured into the market in September and October, becauſe the ſummer thraſhed ſtraw is rarely of ſufficient ſtrength to be uſed as thatch for ſtacks. Oats have generally been ſcarce at market; and one day there was not a ſingle bag of beans preſented. The prices of all theſe grains at Haddington have generally equalled, ſometimes exceeded, thoſe at Marklane; and the ſtack yards being, in every place, of a reduced ſize, compared with thoſe of the five preceding years, a falling off in the market ſupply may be looked for, whenever the wholeſale merchants begin their purchaſes.

Live ſtock, through the quarter, has been a falling article; and, from the

the dulneſs of ſale, and the number of cattle and ſheep on hand, it might be inferred, that the conſumption of butcher meat has ſomehow or other leſſened, as the ſeaſon had advanced. It is to be dreaded, that matters are not yet at their worſt; and, as *keep* is ſcanty over all Scotland, that ſerious loſs will be ſuſtained by all thoſe who unfortunately have a large ſtock on hand. The graſs rents promiſed this ſeaſon were not a trifling affair, as was ſtated in ſubſtance at the time when ſets were made; and thoſe who ſpeculated in ſuch undertakings will be *minus* to a greater extent than ever known in this country. It is really too bad, that thoſe ſo circumſtanced ſhould be charged one ſhilling per pound of rent by the property tax commiſſioners, when, in ſome caſes, nearly the whole rent will be loſt; and, in no caſe, the ſlighteſt proſpect of obtaining a ſingle halfpenny of income or renumeration for outlay of money, trouble incurred, and riſks undergone. The evils to farmers which flowed from the Property tax, were predicted at the outſet; and it may now be added, that ſo long as the tax is patiently borne, ſo long will the evils which accompany it be continued. No other members of the community are rated to the Property tax unleſs income is actually poſſeſſed; but in the caſe of farmers, the tax is levied whether they have income or not; nay, even when it is evident to the dulleſt of plodders that their capital ſtock is cut up, and applied to make good unfortunate and unſucceſsful engagements.——*Nov.* 2.

ENGLAND.

Yorkſhire Quarterly Report.

The late harveſt has been generally favourable in point of weather, and the crops of each ſort of grain have been houſed or ſtacked in good condition. Wheat appears to be the beſt crop, though partially affected by mildew. Barley and oats may be ſomewhat leſs than an average; but beans and peas are the worſt crops ever known; which was aſcertained ſome time ſince, from the prevalence of the black louſe or collier—on the beans in particular. The beſt wheat is about 9s.; Barley 5s. 9d. Oats 4s.; Rye 6s.; and Beans 8s. per buſhel of Winchester. The ſummer fallowing has not been done completely; of courſe the ſeed wheat, on ſome of them, has been committed to the ground among an abundance of quick roots. The ſowing of the clover leas has been a little retarded by drought; but a ſupply of rain, laſt Thurſday, has rendered them in fine order for work. Turnips of all ſorts, which were ſo promiſing about hoeing time, turn out a miſerable crop in the diſtrict. The grub or worm at the root, is ſuppoſed to be the cauſe of the failure. The preſent full growth of after graſs is but a ſmall compenſation for the loſs; and that is moſt eagerly ſought for, as a mean of keeping forward half fattened cattle and ſheep, for which there is no ſale. The young clovers and ſeeds are very flouriſhing. Clover for ſeed has not been productive. Cattle, ſheep and pigs, are nearly unſaleable, except prime fat, and they are unuſually low; the demand from the great manufacturing towns being very trifling. Even horſes, of all ſorts,

are considerably lower in price. Butcher's meat in general about 6d. per lib. Wool lowering. Apples and potatoes are plentiful in the markets. On a review of the whole, the prospect for the breeder and grazier is unpromising. There is a probability that grain will not suffer any great depretiation; and that the supply throughout the year may prove inadequate to the demand.——*Oct. 26.*

Letter from Wales, October 26th.

'Since I last wrote you, there has been favourable weather for farm work. The weather during harvest was fine, and the corn in general has been got together in fine condition. Excepting four or five days' rain in the middle of September, when we began sowing wheat, we have had no hinderance till yesterday; and this day we have again had a heavy fall of rain; of course, the wheat sowing in this part is nearly over. We have had this year a good crop of wheat. I do not remember a better since I have been a farmer, as it yields well in the barn, and weighs well in the mill; but the markets have been glutted of late, and of course the price is low; there being no demand for cattle, money must be had. The best wheat at the mill is now at 24s. for 168 lib.; some as low as 21s. Barley is full as good as was expected on the light soils and gravels; but on the clays, in many places, not more than half a crop. Oats, except some few fields, where the land was good, have failed in most places; and peas and beans, particularly near the sea-side, are worse than the oats. Turnips look well; and potatoes a middling crop. There has been but little of either barley or oats thrashed as yet, farmers expecting these grains will be scarce; but prices are at present rather on the drop than otherwise, for corn of all kinds. Good horses and sheep are the only articles that keep their price;—I may add butter and cheese. Butter has fetched 14d. and 15d. the pound most of the summer. The favourable season produced a good supply of grass, and the pastures are now looking very fine; yet we have a great stock of cattle on hand, and if a demand does not soon appear, fodder will be very short with many before May-day.'

Norfolk Quarterly Report.

The corn having ripened early, and a continuance of fine weather after cutting having commenced, together with a crop far from considerable in bulk, occasioned the harvest to be finished with unusual celerity, and the corn to be housed and stacked in excellent condition. The statements given in last Quarterly Report, have turned out pretty correct; wheat exceeding an average crop; but barley and oats are only two thirds of a crop. Peas, however, are an exception. This grain was stated at one third of a crop; but it is now ascertained that they will not average four bushels per acre. An instance might be given, and that not a solitary one, where two fair harvest bargains were thrashed, and the produce was only seven pecks. The country in fact has not grown seed sufficient for the quantity of land usually sown, though probably as much as will be required next season; for many persons will be deterred from sowing so precarious a crop as peas always are, at so heavy an expense in the first instance for seed. The weather, since harvest, has been highly favourable for getting the wheat into the ground in the light soils,

ſoils, and there remains little to be done; indeed the young plants are generally up, and much already covering the ground. In ſtrong ſoils, the work has been retarded by drought. Fine rains, however, have fallen in the courſe of a few days, which will permit the whole to be finiſhed in good time. Stock of every deſcription (good cart-horſes excepted, which have ſold here at moſt extraordinary prices), have been bought at very low rates. Cows, with calves by their ſides, have ſold from ſeven to eight guineas this year, which, in the laſt, would have obtained more than double that price; and this difference in value is to be attributed chiefly, if not ſolely, to the very general failure in the turnip crop, and to a ſhort ſupply of ſtraw for the cattle.

The young artificial graſſes are unuſually promiſing, and every where a full vigorous plant. Winter vetches, like wheat, have been early put to the ground, and promiſe well. Many artificial and unforeſeen cauſes ſo often happen to raiſe or depreſs the value of corn in the market, that it is extremely difficult to ſpeculate with any degree of confidence on the price for the remainder of the ſeaſon; but, if an opinion may be hazarded, it would be,—that wheat will not maintain its preſent price, and that barley will exceed it. The determination of the diſpute with America will probably have ſome effects on the price of the former article.——*27th October.*

Letter from a Gentleman in Cumberland, October 27.

'THE weather during the three laſt months, has been very variable. Barley and oats, in the upland parts of the county, have been much injured by the inclement ſeaſon. Wheat has in general been ſecured without any conſiderable injury. The produce of wheat, quantity and quality conſidered, is equal to any crop we have had theſe ſome years paſt. On good ſoil, it yields upwards of 30 Wincheſter buſhels per acre. On inferior and light ſoils, particularly where nothing had been neglected, it does not afford upwards of 25 or 27 Wincheſter buſhels. Barley would have been a good crop, had not the continued fall of rain injured it. In many caſes it is fit only for hogs. In the month of September, the fall of rain was nine inches and a half, five of which fell in one day. You may hence infer the injury which grain has ſuffered, ſince the enſuing month has almoſt been uniformly wet. There are ſome hundred ſhocks of barley and oats yet unſecured. Two thirds of the county have houſed their crop without any material injury. Oats are by no means an average crop; and in a conſiderable part of the county, they have been damaged by the heavy fall of rain. Turnips are better than was once expected. Peas and beans have uniformly failed. Milch cows ſell well; Heifers very indifferently. Horſes bring good prices.

'J. C. Curwen, Eſq. deſerves the thanks of the county for his exertions in advancing agricultural knowledge. The Workington Society, of which he is preſident, met on the 2d of October, when eight hundred dined, and a very conſiderable number of premiums were given; the report you ſhall have when publiſhed. It will require a conſiderable degree of prudence, diſintereſtedneſs and perſeverance, on the part of the preſi-

dent, to effect any thing beneficial to the agricultural intereſts of Cumberland. Want of diviſion of labour, in conſequence of ſmall farms, tithes, ſhort leaſes, ignorance and negligence, preſent a barrier againſt agricultural improvements, which nothing but generoſity in the landlords, a liberal and enlightened policy in church and ſtate, the ſucceſsful efforts of enlightened and ſpirited farmers, can ever overcome.'

Letter from the Eaſt Riding of Yorkſhire.—October 27th.

'SINCE my laſt letter, the weather has, upon the whole, been rather dry, conſequently the harveſt work was well executed, at an earlier period than uſual in this diſtrict; which allowed an opportunity (and that has not been neglected) to get a great deal of autumnal work done. The wheat ſeeding is far advanced, and executed, in general, in a good ſtyle. The crop of wheat in this diſtrict is a good one, exceeding an average crop, and ſuperior to that of laſt year, both in quantity and quality. Oats will be ſhort of laſt year, perhaps one-fourth; and beans will not exceed one-half of a crop. Barley is alſo ſuppoſed to be under an average; and comes to hand poor in quality. Beans were deſtroyed by a fly, of the ſame ſpecies as affected the pea crop; but I am certain the crop was deſtroyed where no ſuch fly could be found. The pea crop has failed moſt ſeverely; in great numbers of inſtances, there are no return at all; and where the failure is not ſo fatal, the crop will not be ſufficient for next ſpring ſeeding. Turnips are a partial crop. Upon indifferent ſoils they are bad, but on good ſoils they are not amiſs; they are ſelling at what we call a high price, viz. from four to ſix guineas per acre, to be eaten with ſheep. I believe the failure of the crop in the Weſt Riding of Yorkſhire, and the more ſouthern diſtricts, is the chief cauſe of the high price given here; as the ſheep breeders upon the wolds cannot ſell their ſheep, the numbers ſhown at the different fairs exceed all precedent. Potatoes turn up a light crop, being very ſmall, and ſelling very high; the preſent price is 12s. per tub, which contains about 14 pecks Wincheſter.—I believe the meaſure is generally made of a porter barrel, which contains 36 gallons; one end being taken out, and that filled a little above the edge. Flax is in general very ſhort, and likely to prove a bad crop. Cattle and ſheep, both fat and lean, have a dull ſale. Fat cattle at 5s. and 6s. per ſtone, ſink; ſheep 4½d. to 6d. per lib. do.; pork 6s. to 6s. 6d. per ſtone. Lean cattle and ſheep are full 30 *per cent.* lower in price than they were twelve months ago. Our grain markets are very dull at preſent. Wheat ſells at 63s. to 68s. Oats 23s. to 32s. Beans 54s. to 56s. Barley 38s. to 42s. per quarter, Wincheſter.

Letter from London, October 27th.

'THE information given in our laſt reſpecting the crops of grain, has in general been realized. Wheat, in all the ſouthern diſtricts of the iſland, is conſidered as a great crop, and of fine quality, having been in general houſed in the beſt condition. Barley is under an average; and oats will alſo be conſiderably deficient in quantity. The pea crop is univerſally bad, whole diſtricts ſcarce returning the ſeed; and beans, from the beſt information, is a ſhort crop.

'The

'The ſupply of new wheat has been pretty liberal, and, in general, of good quality; though ſome of the runs of Kentiſh wheats have been rough. The ſupply of barley has been ſhort, and fine ſamples have been taken off at high prices for malting. Other grains have been on the advance, eſpecially boiling peas, which have ſold ſo high as 8l. 8s. per quarter, but are now on the decline, probably from the very high price having materially affected the conſumption. The ſupply of beans has been ſmall; and great part of the new oats at market (chiefly from the North) have been ſoft. But as we have had no foreign importation of late to come in competition with them, they have ſold at good prices.

'The probable price of this article in the ſpring will depend much on the proſpect of receiving foreign ſupplies, which at preſent ſeems to be doubtful.'

Letter from a Farmer near Wakefield, Oct. 28.

'We had a favourable harveſt, and the crop is ſecured in excellent condition. Wheat is conſidered as a full average crop; but does not yield ſo well under the flail as laſt year. Barley is pretty good in quantity, but the quality inferior to laſt year, being much of it coarſe and thin. Oats and beans are very deficient, particularly the latter, and alſo peas; both of which were attacked with the fly and mildew, as mentioned in my laſt; but to a much greater extent than at that time apprehended. Peas, in many places, were quite deſtroyed; and ſeveral fields of beans will not produce the ſeed ſown. In conſequence of this, that grain has got to a very high price, and is likely to remain ſo during winter. Indeed, every kind of winter feed is likely to be ſcarce, eſpecially as turnips in this circuit have failed. They promiſed well till the middle of Auguſt, when they were attacked with a diſeaſe ſomething like the beans. The leaves curled and dried away; the root, in many places, rotted; and thoſe that remain are ſmall, hard as wood, and taſteleſs; ſo that they can afford little nutriment to the cattle. In conſequence of this and the ſtagnation in trade, both lean and fat ſtock have conſiderably lowered in price, I think full 15 per cent. on an average, which has cauſed grazing to be a loſing buſineſs, especially to thoſe that have kept their ſtock till the latter end of the year. Cattle have not fed well, and there is much half fatted ſtock in the markets, which ſells very low, in conſequence of the ſcarcity of winter feed. Beef, 5s. 4d. to 6s. per ſtone of 14 lib. ſink; mutton, 5½d. to 6d. per lib. ſink; very fat wethers a little more.

Our wheat-ſeed ſeaſon has been, and is at this time, very favourable. The wet land was got ſown in excellent tilth. Some fine rain which fell on the 22d inſtant, brought the dry lands into good order, which are now ploughing kindly, and receiving the grain very well. In conſequence of the diſaffection of our ancient allies, and the diſtreſs that pervades a great part of the Continent, we have the proſpect of a very gloomy winter: our mercantile men have ſuffered great loſſes; and many failures, in conſequence, have occurred, and many more expect-

ed. This, of courſe, throws a great many of the lower claſſes out of employment, and will eventually affect the farming intereſt. The conſumption of the produce of the ſoil muſt be greatly leſſened; many of the poor thrown upon the pariſh; and thereby become a burden upon land, which is already ſaddled with an intolerable expenſe. I am aſtoniſhed at the high rents given for land in your country; your public burdens muſt be much leſs than ours, otherwiſe ſuch rents could not be paid.'

Northumberland Quarterly Report.

Through the month of Auguſt, and to the ſixth of September, we were favoured with fine weather. On that day, a great quantity of rain fell, and occaſioned in many rivers one of the higheſt floods ever remembered, by which conſiderable loſſes were ſuſtained. Great quantities of corn were ſwept away, and what remained uncut was much injured by the water ſtanding upon, or running over it: ſince that time, we have ſcarcely had two fair days together, which has made the harveſt very precarious and tedious; and the greateſt part of the crop has been carried in an indifferent ſtate. It is believed that there are few inſtances of ſprouted grain, the weather being generally cold. This long ſeries of wet weather prevented the ſummer fallows for wheat from being got into proper condition, and many yet remain unſown.

The autumn ſown wheat is in general below an average crop, but the grain good in quality. The ſpring ſown wheat was moſtly ruſted in the ſtraw, and very late: two froſty nights in September turned it white, but added little to the ripening; of courſe, it will be found very deficient in produce and quality. Oats and barley may be taken as fair average crops. Beans and peas are conſiderably below an average.

In the county of Durham there are very few crops of either peas or beans worth reaping; and in ſome parts of Yorkſhire they are alſo very deficient. The wheat crop in thoſe diſtricts was ſcarcely ever known to be better, the grain preſenting a fine ſample, and very weighty.

The turnip crop upon dry ſoils which were early ſown, are remarkably good; thoſe that were ſown later, are equally deficient; and the cold wet weather ſince the ſixth of September has very much impeded their growth, the bulbs having increaſed very little in ſize during that period. The caſe is the ſame in the turnip diſtricts of Durham and the North Riding of Yorkſhire.

The markets for live ſtock of every deſcription have been lowering from week to week. At St Ninians fair on the 27th September, long woolled ewes were ſold from 32s. to 35s. per head; which is from 6s. to 9s. lower than the ſame flocks were ſold for laſt year; and, at Wooler fair on the 17th October, they were ſold for 2s and 3s. per head leſs than at St Ninians, and 12s. or 13s. lower than they were ſold for two years ſince, at the ſame fair.

The beſt price for fat cattle at St Ninians fair was 6s. per ſtone of 14 lib. ſink. And at Morpeth laſt week, little more than 5s. per ſtone was given. At Yarne fair, on the 19th, lean cattle were ſold about 20 per cent. lower than for ſome years preceding.——29. *October.*

Extract

Extract of a Letter from a reſpectable Farmer in Kent, November 2d.

'Our crop of wheat is very good, and the quality exceedingly fine. Early ſown barley is alſo good; but the middle ſown is very indifferent, and the latter barleys are very ſhort in produce. The ſame may be ſaid of oats in general. Beans and peas have not totally failed, but they are the worſt crop I ever knew. Hops are better than we expected; upon the whole, we count them a good *half crop*. Orchard fruit plentiful. Hay a ſhort produce, but well got up. Autumn graſs very ſcarce; and lean cattle and ſheep, in conſequence, are much fallen in price. Beef and mutton are alſo much reduced in price; but fat ſtock is expected to be very ſcarce in the ſpring. You aſk my opinion as to the probable prices of our crops; I cannot ſay what they may be ſome time hence; but the beſt new wheat at preſent is worth 64s. per quarter of 8 Wincheſter buſhels; and fine flour ſells very dull at 55s. per ſack of 5 buſhels, each 56 lib. avoirdupois.

'On account of the failure of the crops of beans and peas, there muſt be a great quantity of barley conſumed in fattening hogs and pigs, which, added to the failure of the late crops of barley, will neceſſarily make that article ſell high, and may perhaps be a recompenſe to the farmers for the loſs of their beans and peas. We have had a dry autumn, and I ſhould have thought that your crops ere this muſt have all been well harveſted. Your account of injury from rain has ſurpriſed me much.'

NOTICES TO CORRESPONDENTS.

The valuable papers tranſmitted by our reſpectable friend, Sir John Sinclair, Bart., relative to Highland Huſbandry, and the Cauſes and Conſequences of Emigration, ſhall be duly attended to. We will endeavour to preſent them all at once, ſo as a full view may be obtained of theſe important ſubjects.

The "*Sketch of the Antient and Preſent State of Stirlingſhire Huſbandry*," promiſed by our reſpectable Correſpondent in that diſtrict, will be highly acceptable. It is our intention to extend thoſe Sketches to the whole of Scotland, thereby furniſhing our Readers with correct Pictures of Huſbandry in all its branches.—A Sketch of Eaſt Lothian Huſbandry ſhall be given as early as poſſible.

A "*Reply to* Baron Hepburn's *Outline View of the Corn Laws, with their Cauſes and Effects*," is received, which ſhall be preſented in our next.

A great Number of Communications have lately come to hand, which ſhall be regularly attended to.

We are ſorry that, from want of room, the "*Letter of Intelligence from Langholm*," and various Quarterly Reports, could not be inſerted.

No. XXXIII. will be Publiſhed on the Firſt Monday of March.——By putting the Publication of each Number a Month back, we will be enabled to furniſh our Readers with a fuller View of the Operations of each Seaſon than hitherto practicable.

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END OF VOLUME EIGHTH.

D. Willison, Printer, Edinburgh.